OKI

OKIPAGE18 / OKIPAGE20Plus
LED Page Printer

Maintenance Manual

ODA/ OEL/ INT

1999.5.31 Rev. 1

PREFACE

This maintenance manual describes the field maintenance methods for OKIPAGE18/OKIPAGE20Plus.

This manual is written for use by maintenance personnel. Note, however, that the user should refer to the USER'S MANUAL for methods of handling and operating the equipment.

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1. CONFIGURATION

1.1 System Configuration

OKIPAGE18 / OKIPAGE20Plus consists of control and engine blocks as the standard configuration (See Figure 1-1.)
In addition, the following options are also available.

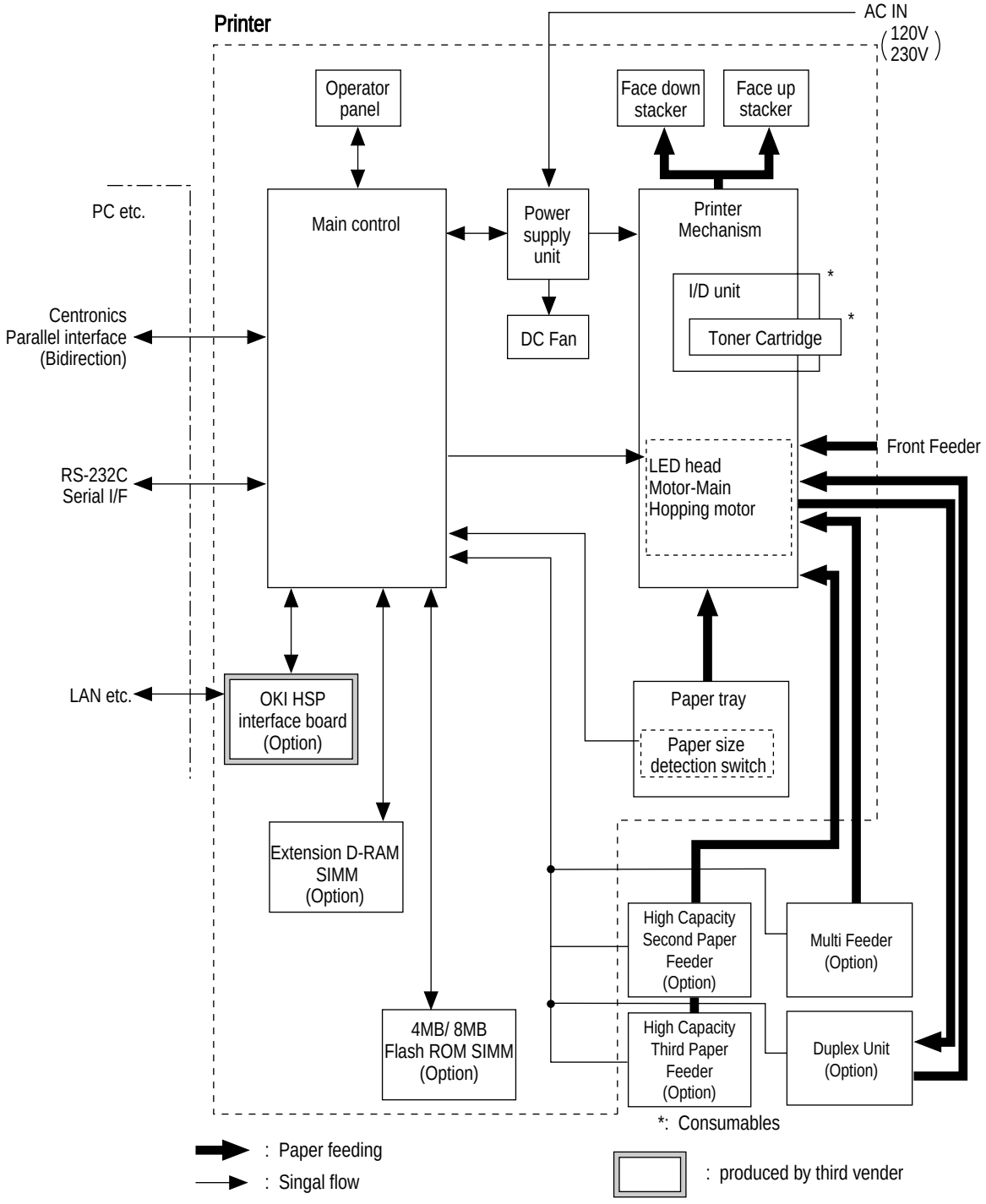


Figure 1-1

1.2 Printer Configuration

The printer unit consists of the following hardware components:

- Electro-photographic processor
- Paper feeder
- Controller
- Operator panel
- Power supply unit

Figure 1-2 shows the printer unit configuration.

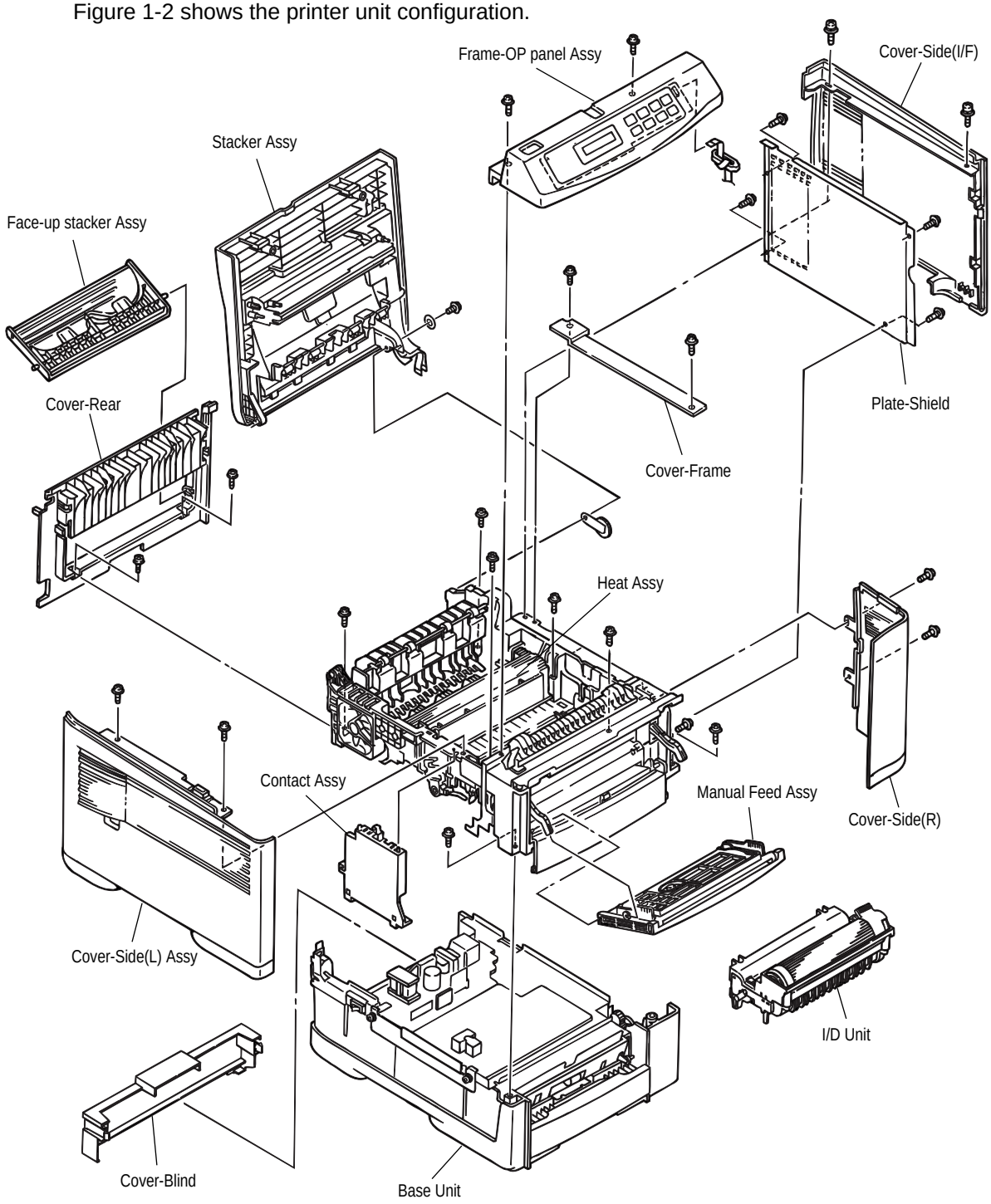
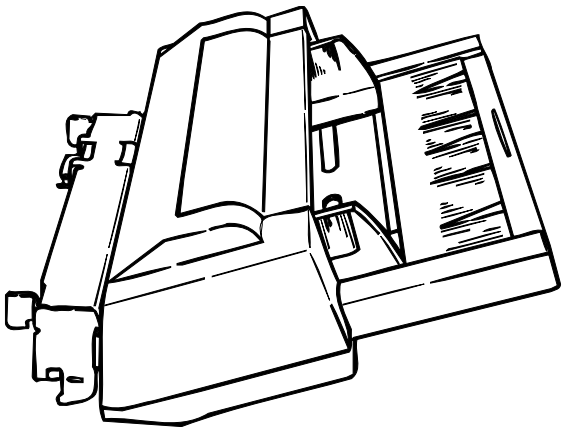


Figure 1-2

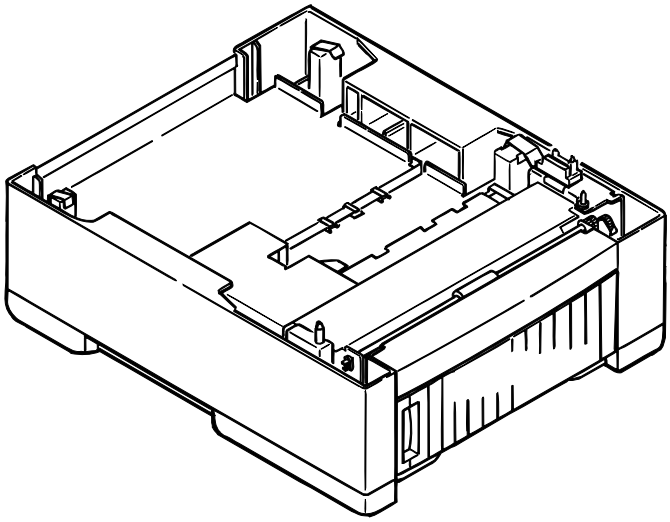
1.3 Optional Configuration

The options below are available for use with OKIPAGE18 / OKIPAGE20Plus. They are sold separately from the printer unit.

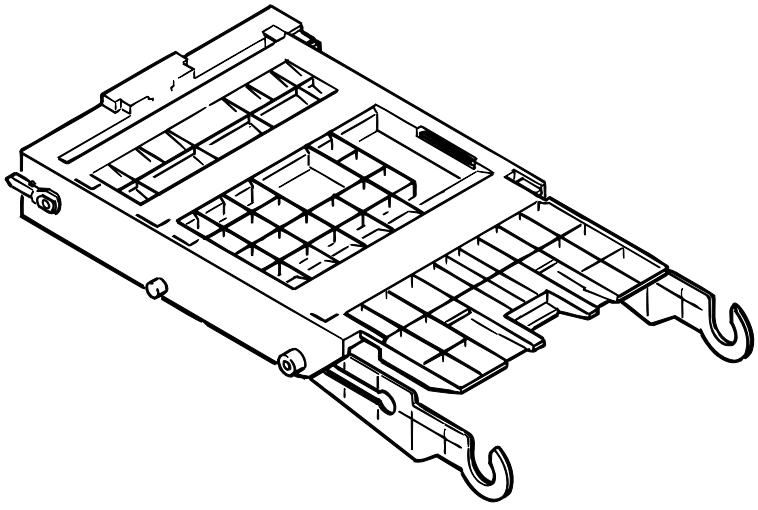
(1) Multi Feeder



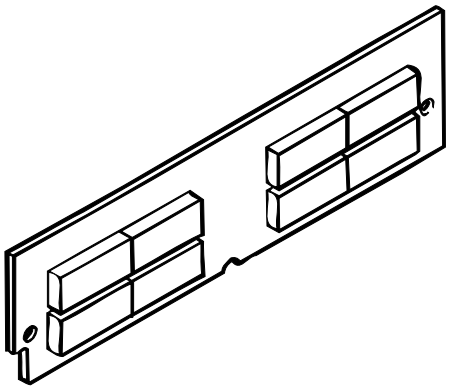
(2) Second/ Third Paper Feeder



(3) DUPLEX Unit

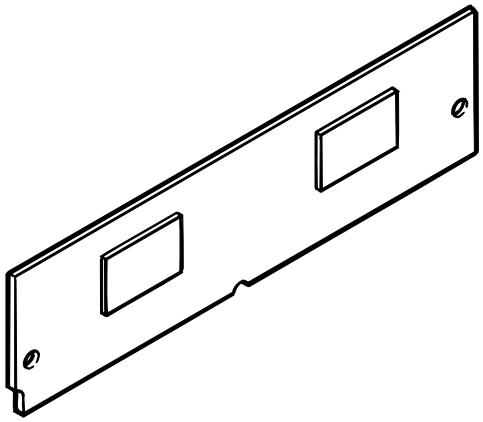


(4) D-RAM SIMM module (72 pin SIMM, 16 MB/32 MB, EDO SIMM type)



(See 7.2 (1) for where to install.)

(5) Flash ROM module (72 pin SIMM, 4MB/8MB)



(See 7.2 (1) for where to install.)

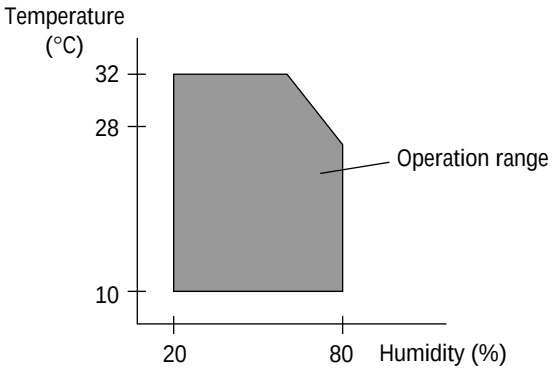
1.4 Specification

(1)	Type	Desk top	
(2)	External dimensions (excludes protruding Portion)	Height 13.0” (331 mm) Width 14.4” (366 mm) Depth 18.2” (462 mm)	
(3)	Weight	19.0 kg (42 lbs)	If Installed Duplex 21.3 kg (47 lbs)
(4)	Development method Exposure method	Dry electrophotography LED stationary head	
(5)	Paper used	<Type> • Standard paper – Xerox 4200 (20 lbs) • Application paper (manual face-up feed) – Label – Envelope – OHP paper (Transparency) <Size> • Standard sizes – Letter – Legal – Executive – Envelope (without Duplex printing) – A4 – A5 (without Duplex printing) – B5 (without Duplex printing) – A6 (without Duplex printing) • Applicable sizes – Width: 3.4” to 8.5” (86 to 216 mm) – Length: 5.5” to 14” (140 to 355.6 mm) <Thickness> – Automatic feed: 16 to 28 lbs (60 to 105 g/m^2) – Manual feed: Label, OHP paper (transparency) Envelope, 16~36 lb	
(6)	Printing speed	First print: 7.4 sec. Continuous print: 20 sheets/min. [at duplex print :10 sheets/min] Warm-up time: 90 sec. [at room temperature 77˚F (25˚C) and rated voltage (120 VAC)]	
(7)	Paper feed method	Automatic feed or manual feed	
(8)	Paper delivery method	Face down/face up	
(9)	Resolution	600 x 600 dots/inch (default) 600 x 1200 dots/inch	
(10)	Power input	120 VAC + 5.5%, –15% (ODA) 230 VAC + 10%	
(11)	Power consumption	Peak: Approx. 860W Typical Operation: Approx. 400W Idle: Approx. 95W Power save mode: Approx. 25W	

(12) Temperature and humidity

	In operation	Power off mode	During Storage	Unit
Temperature	50 - 90 (10 - 32)	32 - 110 (0 - 43)	14 - 110 (–10 - 43)	°F (°C)
Humidity	20 - 80	10 - 90	10 - 90	%RH
Maximum wet bulb temperature	77 (25)	80.4 (26.8)	———	°F (°C)
Minimum difference of wet and dry bulb temperatures	35.6 (2)	35.6 (2)	———	°F (°C)

Notes:
1. Storage conditions specified above apply to printers in packed condition.
2. Temperature and humidity must be in the range where no condensation occurs.



(13) Noise

During operation: 52 dBA or less (without second tray)
55 dBA or less (with second tray)
At standby: 45 dBA or less
Power save mode: 43 dBA or less

(14) Consumables

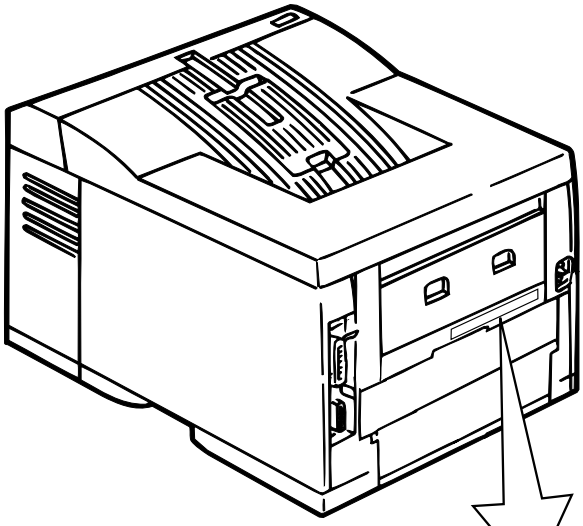
Toner cartridge kit 6,000 pages(5% duty)*
Image drum cartridge 30,000 pages(at continuous Simplex printing)*
19,000 pages(3 page/job)(Simplex printing)*

* Simplex printing without Power Save.

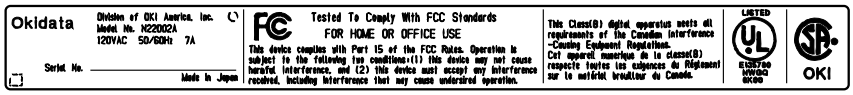
1.5 Safety Standards

1.5.1 Certification label

The safety certification label is affixed to the printer in the position below.

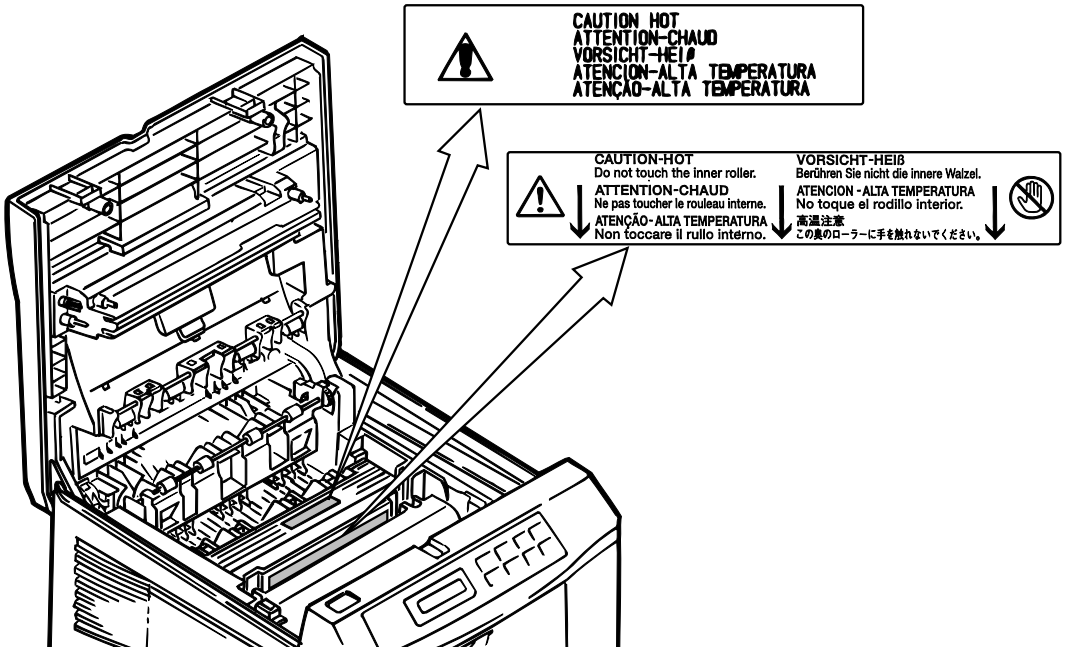


ex. ODA 120V


Okidata
Division of OKI America, Inc.
Model No. N22002A
120VAC 50/60Hz 7A
Serial No.
Made in Japan
Tested To Comply With FCC Standards
FOR HOME OR OFFICE USE
This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:(1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.
This Class(B) digital apparatus meets all requirements of the Canadian Interference -Causing Equipment Regulations.
Cet appareil numerique de la classe(B) respecte toutes les exigences du Réglement sur le matériel brouiteur du Canada.
LISTED
OKI

1.5.2 Warning label

The warning label is affixed to the portion which may cause an injury to human body. Follow the instructions on warning labels during maintenance.



2. OPERATION DESCRIPTION

OKIPAGE18 / OKIPAGE20Plus consists of a main control board, a power supply unit (120V/ 230V), a power supply unit (high voltage), an operator panel and an electro-photographic process mechanism.

The control board receives data through a host I/F, decodes and edits the data, and stores the edited data in a memory. After completing edition of one page of data, it references the font memory and generates bit data on the same memory. At the same time, it transfers the bit image data to an LED head in units of one dot line.

The electro-photographic process mechanism prints data on paper.

The operator panel is used for operations and status display.

Fig. 2-1 shows an OKIPAGE18 / OKIPAGE20Plus block diagram.

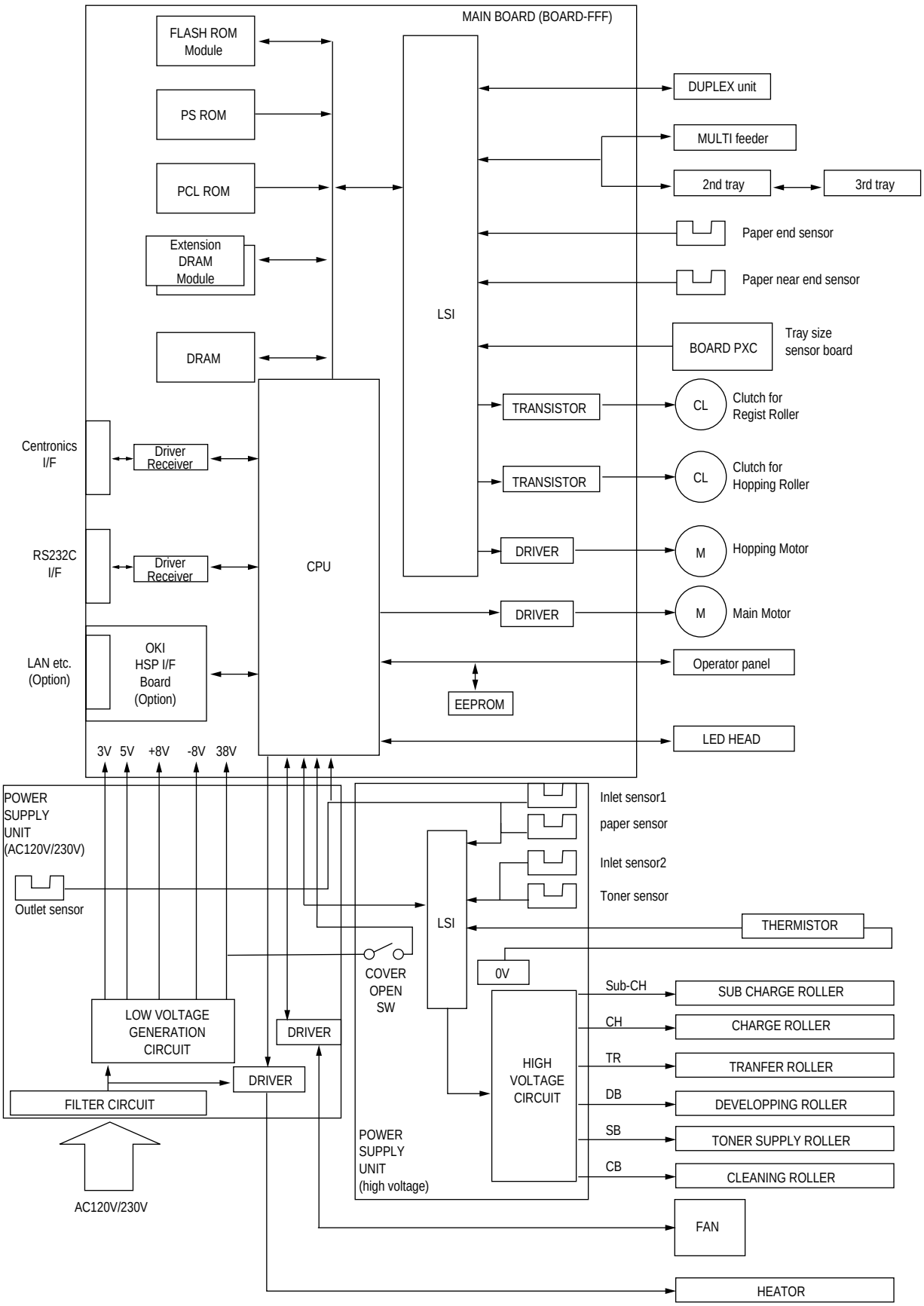


Figure 2-1 OKIPAGE18 / OKIPAGE20Plus block diagram

2.1 Main Control Board (BOARD-FFF)

The control board consists of an one chip CPU,a LSI, program/font ROM's, DRAM's, an EEPROM, a host interface circuit, and a mechanism driving circuit.

(1) One-chip CPU

The one-chip CPU is a custom CPU (32-bit internal bus, 32-bit external bus, 120-MHz clock) that incorporates an RISC CPU and its peripheral devices, and has the following functions.

Built-in device	Function
Chip select controller Bus controller DRAM controller	Control of peripheral LSI, ROM, DRAM and I/O device
DMA controller	Transfer of data from Host I/F to RAM
Serial interface controller	Control of RS232C serial interface
Parallel interface controller	Control of Centronics parallel interface
Timer	Generation of various control timing Monitoring of paper running and paper size
Serial I/O port	Control of serial interface between controller and operator panel, EEPROM Control of a serial interface between controller and power supply board
I/O port	Inputting of various sensor signals Outputting of various control signals
Motor driver controller	Control of Main Motor
Image processing circuit	Executes the image data process for printing.

(2) Program/font ROM's

- PCL ROM
  The program/font ROM's store the HP LJ5 emulation program and various types of font. MASK ROM is used as the program/font ROM's.

- PS ROM
  The program/font ROM's store the Adobe PostScript Level 2 program and its fonts.

(3) DRAM's

16-Megabyte DRAM (64 Mbit DRAM x 2) is mounted as resident memory to be used for storing the program and providing various buffers. This DRAM is expandable up to 128 Mbytes by adding expansion memory (SIMMs). This DRAM provides the areas shown in the following table.

Memory area	Use	Memory capacity setting	
		MENU	Expansion RAM
System area	Working area used for the program	Fixed	Fixed
Raster buffer	Stores converted bit image data	Enable	Expandable
Receive buffer	Stores temporarily the data received from the host interface	Enable	Expandable
Page buffer	Adds print information to the analyzed receive data and stores the resulted data.	–	Expandable
DLL/macro buffer	Stores soft fonts and macro data.	–	Expandable
Font cache buffer	Stores bit map fonts generated by the font rasterizer based on scalable font information	Enable	Expandable

(4) EEPROM

The EEPROM has a 16-kbit capacity and stores the following data.

- Menu data
- Various counter data (page counter, drum counter, fuser counter, etc.)
- Adjustment parameters (LED head drive time, print start position, etc.)

(5) LSI (LZ9FF22)

Built in device	Function
Serial I/O port	Control of serial interface between controller and 2nd tray, 3rd tray, Multi purpose feeder Control of serial interface between controller and Duplex unit
Motor driver controller	Control of Hopping motor
I/O port	Inputting of various sensor signals Outputting of various control signals

(6) Host interface

This printer has the following interfaces to the host.

- Centronics bidirectional parallel interface
- RS232C interface
- OKI HSP interface (Option)

The single effective interface or the automatic interface select mode can be selected using the menu. If the busy state of the printer continues for a long time period, the buffer near-full control releases the busy status at constant intervals even if the host side is busy so not to cause the interface time-out at the host side.

(a) Centronics bidirectional parallel interface

This is an interface conforming to IEEE-1284 and provides either of unidirectional and bidirectional communications according to each of the following communication modes.

- Compatibility mode
  Unidirectional communications from the host to the printer.

- Nibble mode
  This mode transmits 4-bit wide data from the printer to the host. In this mode, each 1-byte data is transferred in the form of two nibbles using ERROR, BUSY, FAULT, and SELECT signal leads. This mode can provide the bidirectional operation in combination with the compatibility mode.

- ECP mode
  This mode provides the asynchronous bidirectional interface and transmits and receives 1-byte data using eight data signal leads under the semi-duplex control by the host.

When the power is turned on, the compatibility mode is automatically selected. The change to another mode from the compatibility mode is made through negotiation.
(When the BI DIRECTION is set to ENABLE in the menu, this change can be performed.)
(For the electrical/physical characteristics of this interface, see APPENDIX B)

(b) RS232C serial interface

The following protocol is supported for the serial interface conforming to EIA RS232C.

- READY/BUSY (DTR HI or DTR LO)
- X-ON/X-OFF
- RBST X-ON

(For the electrical/ physical characteristics of the interface, see APPENDIX B)

(c) OKI HSP interface (Option)

This interface (slot) is an OKI unique universal interface that provides the platform to connect various of boards (including those supplied by third venders) such as the LAN connection expansion board and SCSI expansion board.
Any expansion boards compatible with this interface can be mounted on the Control board in the piggyback board from without modifying the program at the printer side. The conceptual diagram of the OKI HSP interface is shown in Figure 2-2.
(For the electrical/physical characteristics of the OKI HSP interface, see the OKI HSP interface technical manual.)

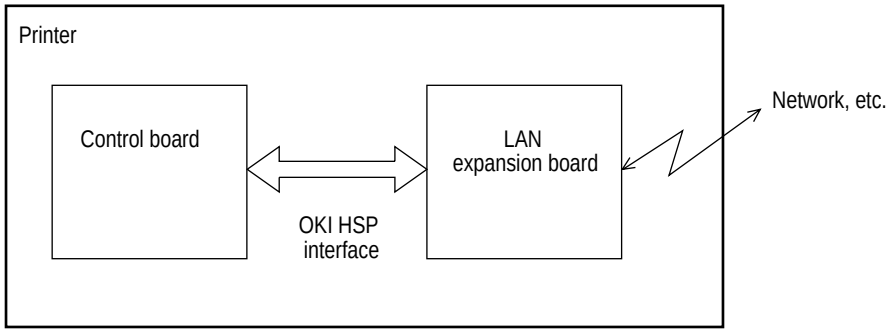
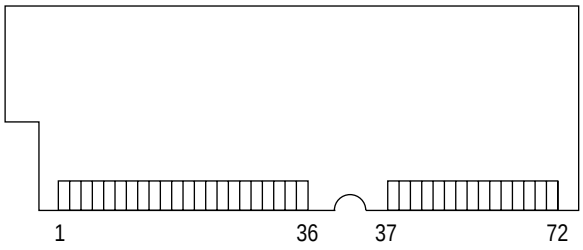


Figure 2-2

(7) RAM module

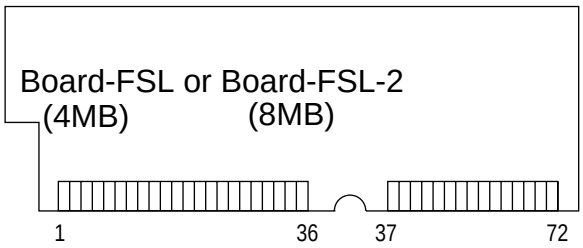
- Pin layout



- Basic specificaton
  - Type: 72 pins Standerd SIMM (32 bits buss width)
    [Note : EDO SIMMtype**]**
  - Access time: 60ns, 70ns, 80ns, 100ns
  - Capacity: 16 or 32MB
  - Parity: None

(8) Flash ROM module

- Pin layout



- Basic specificaton
  - Type: 72 pins SIIM (32 bits buss width)
  - Access time: 90ns
  - Capacity: 4 or 8MB

2.2 Power Supply Unit

The power supply unit consists of an AC filter circuit, a low voltage power supply circuit, a high voltage power supply circuit, heater drive circuit, and photosensors.

(1) Low voltage power supply circuit

This circuit generates the following voltages.

Output voltage	Use
+5 V	Logic circuit supply voltage
+30 V	Motor and fan drive voltage and source voltage for high-voltage supply
+8 V	Reset circuit, RS232C Line voltage
–8 V	RS232C Line voltage
+3.8V	LED HEAD supply voltage

(2) High voltage power supply circuit

This circuit generates the following voltages necessary for electro-photographic processing from +30 V according to the control sequence from the control board. When cover open state is detected, +30 V supply is automatically interrupted to stop the supply of all the high-voltage outputs.

Output	Voltage	Use	Remarks
Sub-CH	-15 μA	Voltage applied to Sub charging roller	
CH	-1.30 KV	Voltage applied to charging roller	
DB	-220 V/+300 V	Voltage applied to developing roller	
SB	-450 V	Voltage applied to toner supply roller	
TR	+4 KV/-1.3 kV	Voltage applied to transfer roller	Variable + Only
CB	+450 V/-1350V	Voltage applied to clearimng roller	

(3) Photosensor

The photosensor mounted on this power supply unit supervises the paper running state during printing.

Figure 2-3 shows the sensor layout diagram.

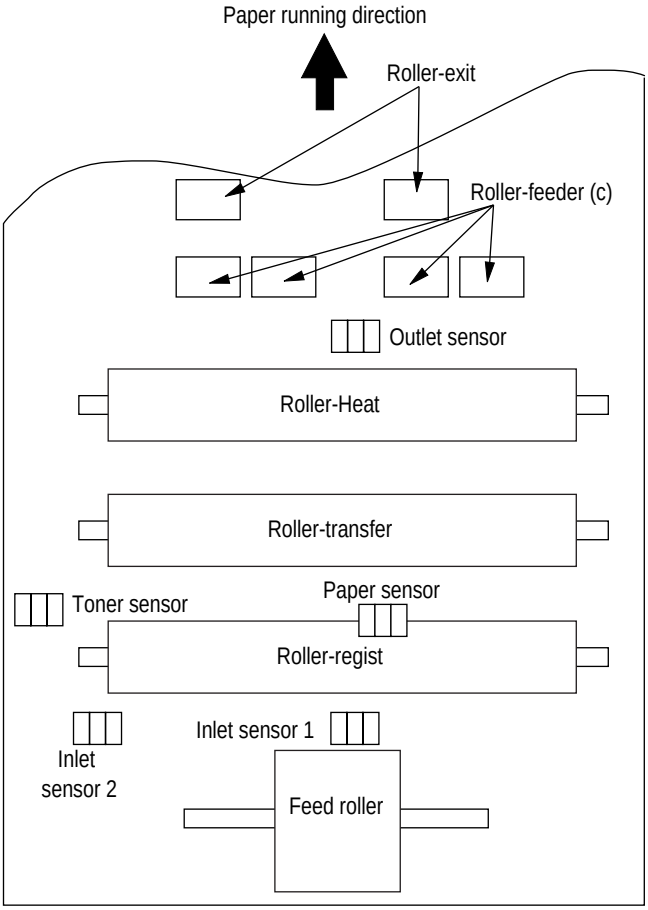


Figure 2-3

Sensor	Function	Sensing state
Inlet sensor 1	Detects the leading part of the paper and gives the supervision timing for switching from hopping operation to feeding operation. Supervises the paper running state and the paper size according to the paper reach time and running time.	ON: Paper exists. OFF: No paper exists.
Inlet sensor 2	Detects the form width.	ON: A4 or larger OFF: Smaller than A4
Paper sensor	Detects the leading part of the paper. Supervises the paper running state.	ON: Paper exists. OFF: No paper exists.
Outlet sensor	Supervises the paper feed and size according to the time of arrival to the sensor and the time of passage of paper.	ON: Paper exists. OFF: No paper exists.
Toner low sensor	Detects the lack of toner.	ON long: Toner low exists OFF short: No Toner low exists

2.3 Electro-photographic Process

2.3.1 Electro-photographic process mechanism

This mechanism prints image data from the control board on the paper by electro-photographic process.

The Figure 2-4 shows the layout of the electro-photographic process mechanism.

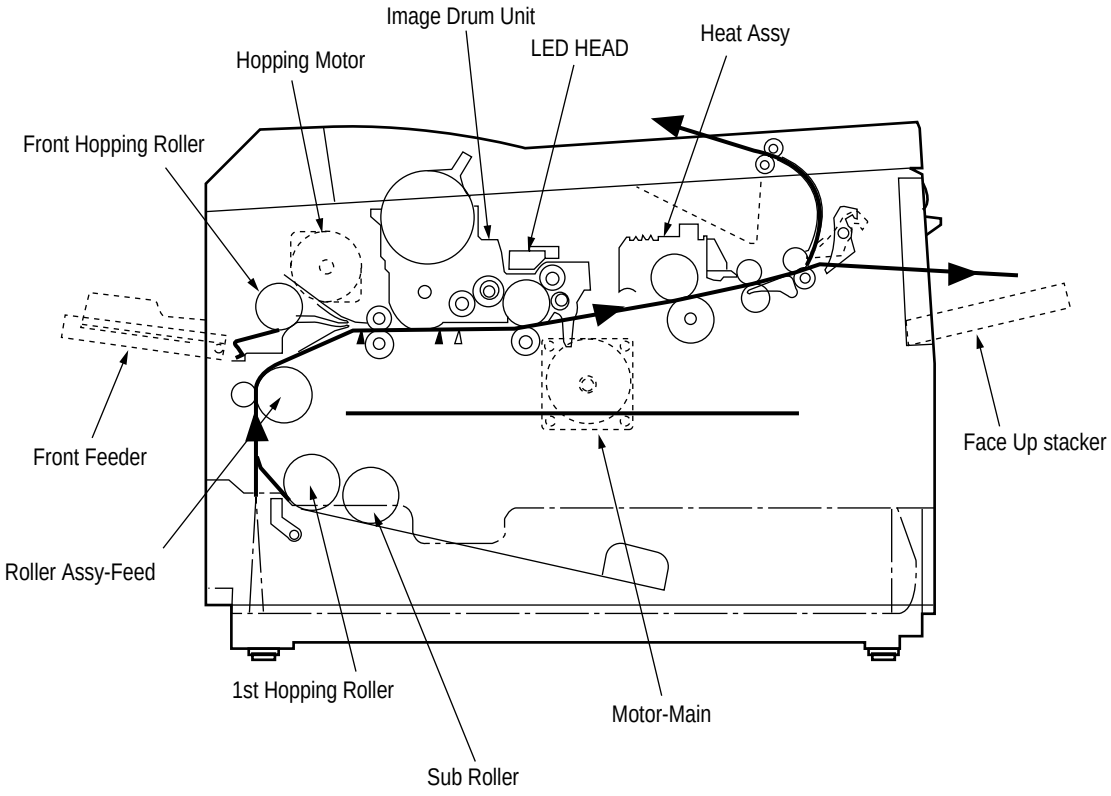


Figure 2-4

(1) Image drum unit

The image drum unit consists of a sensitive drum, a charger, and a developer. The unit forms a toner image on the sensitive drum, using a electrostatic latent image formed by the LED head.

(2) Hopping motor

This motor is a pulse motor of 48 steps/rotation that is two-phase excited by the signal from the control board. It drives the hopping roller of the first tray and the front feed roller via two one-way clutches according to the direction of rotation.

(3) Motor-Main

This motor is a pulse motor of 72 steps/rotation that is two-phase excited by the signal from the control board and is the main motor of this mechanism.

(4) Clutch (for Regist)

Swithes the transfer of power to Roller Regist if necessary depending on the power from Motor-Main and instructions from the control PCB.

(5) Clutch (for Feed Roller)

Swithes the transfer of power to Feed Roller if necessary depending on the power from Motor-Main and instructions from the control PCB.

(6) LED head

Image data for each dot line from the control board is received by the shift register and latch register. The 4992 LEDs are driven to radiate the image data to the image drum.

(7) Fuser

The fuser consists of a heater, a heat roller, a thermistor and a thermostat.
An AC voltage from the power supply board is applied to the heater under the control of the HEATON signal from the control board. This AC voltage heats the heater. The control board supervises the heat roller temperature via the thermistor, and regulates the heater roller at a predetermined temperature (202 °C : Normal paper, MEDIA TYPE = MEDIUM) by connecting or disconnecting the AC voltage supply to the heater.
If the heater roller temperature rises abnormally, the thermostat of the heater voltage supply circuit is activated to cut the AC voltage supply forcibly.

2.3.2 Electro-photographic process

The electro-photographic processing is outlined below. Figure 2-5 shows the electro-photographic printing process.

① Charging

The surface of the image drum is uniformly charged with negative charges by applying a negative voltage to the charge roller.

② Exposure

Light emitted from the LED head irradiates the negatively charged surface of the image drum. The surface potential of the irradiated part of the image drum surface is lowered, so that an electrostatic latent image associated with the print image is formed.

③ Developing and toner recovery

When the negatively charged toner is brought into contact with the image drum, it is attracted to the electrostatic latent image by static electricity, making the image visible.
At the same time, the residual toner on the image drum is attracted to the developing roller by static electricity.

④ Transfer

When paper is placed over the image drum surface and a positive charge, opposite in polarity to the toner, is applied to the reverse side of the paper from the transfer roller, the toner is attracted by the positive charge and is transferred to the paper. As a result, the toner image formed on the image drum is transferred to the paper.

⑤ Temporary cleaning

Residual toner that remains on the image drum without being transferred is made uniform by the cleaning roller and is temporarily attracted to the cleaning roller by static electricity.

⑥ Fusing

The toner image transferred to the paper is fused under heat and pressure.
Figure 2-6 shows an electro-photographc process timing chart.

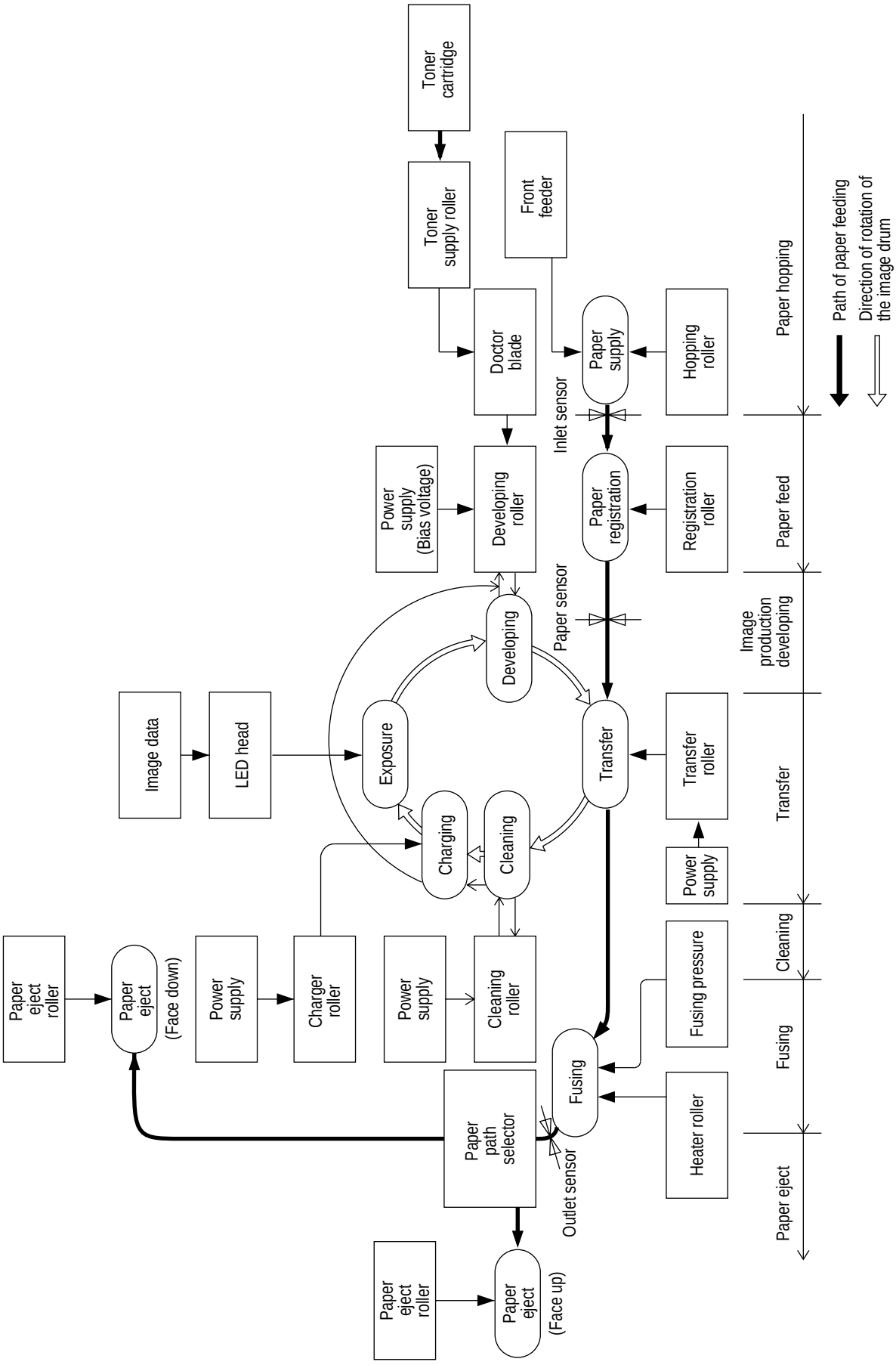

Toner cartridge
Toner supply roller
Front feeder
Doctor blade
Paper supply
Hopping roller
Inlet sensor
Power supply (Bias voltage)
Developing roller
Paper registration
Registration roller
Paper sensor
Developing
Image data
LED head
Exposure
Transfer
Transfer roller
Charging
Cleaning
Power supply
Paper eject roller
Paper eject (Face down)
Power supply
Charger roller
Power supply
Cleaning roller
Fusing pressure
Fusing
Paper path selector
Heater roller
Outlet sensor
Paper eject roller
Paper eject (Face up)
Paper hopping
Paper feed
Image production developing
Transfer
Cleaning
Fusing
Paper eject
Path of paper feeding
Direction of rotation of the image drum

Figure 2-5

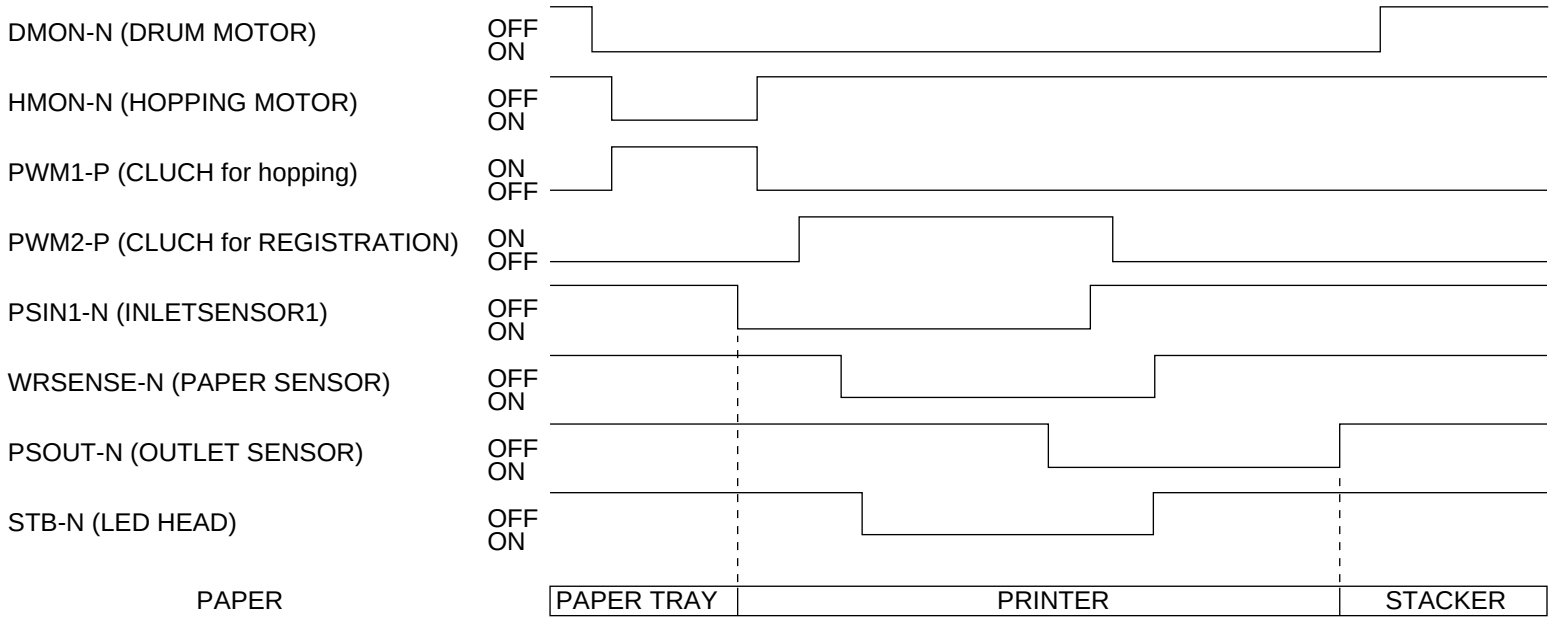


Figure 2-6

SIMPLEX PRINTING TIMING CHART

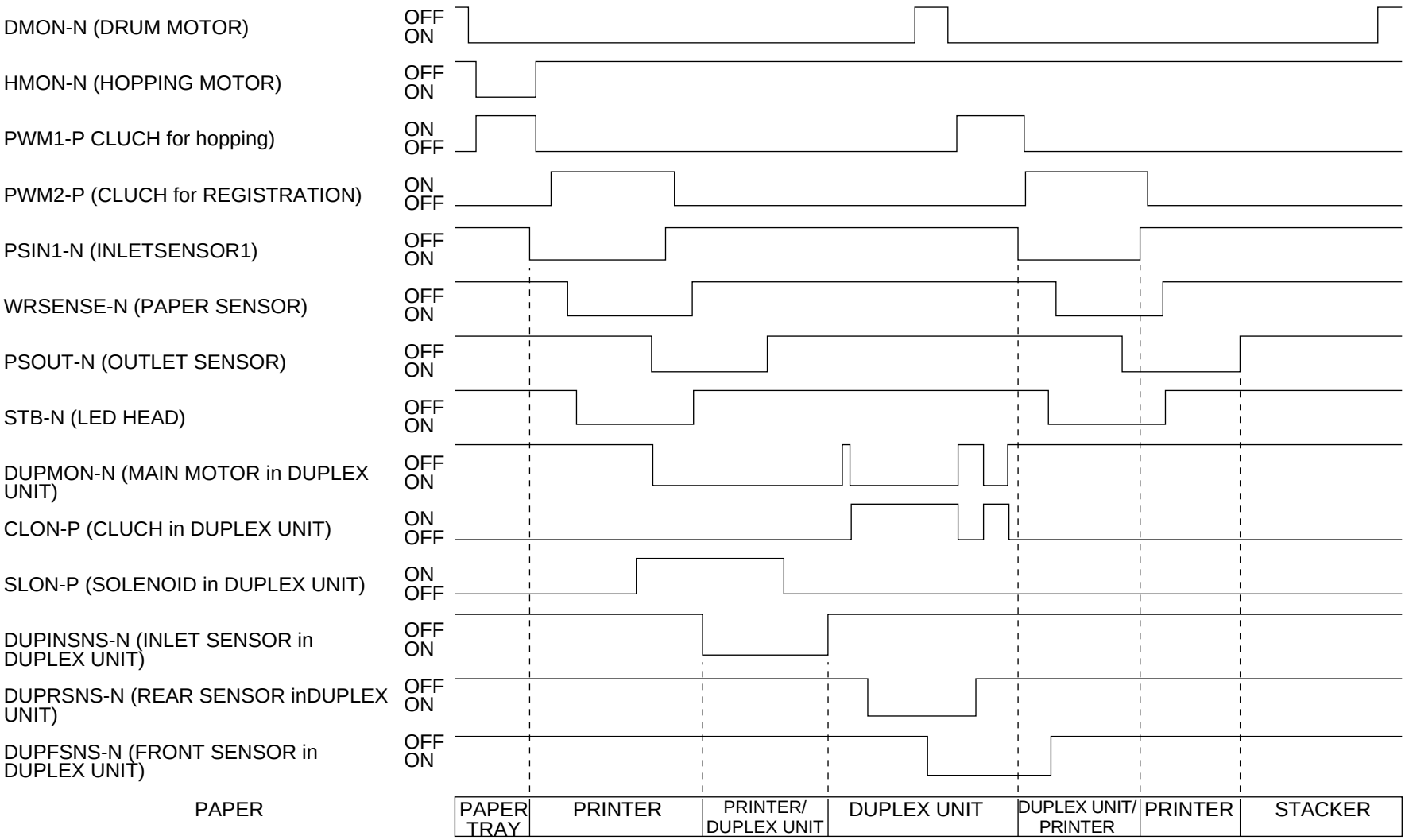


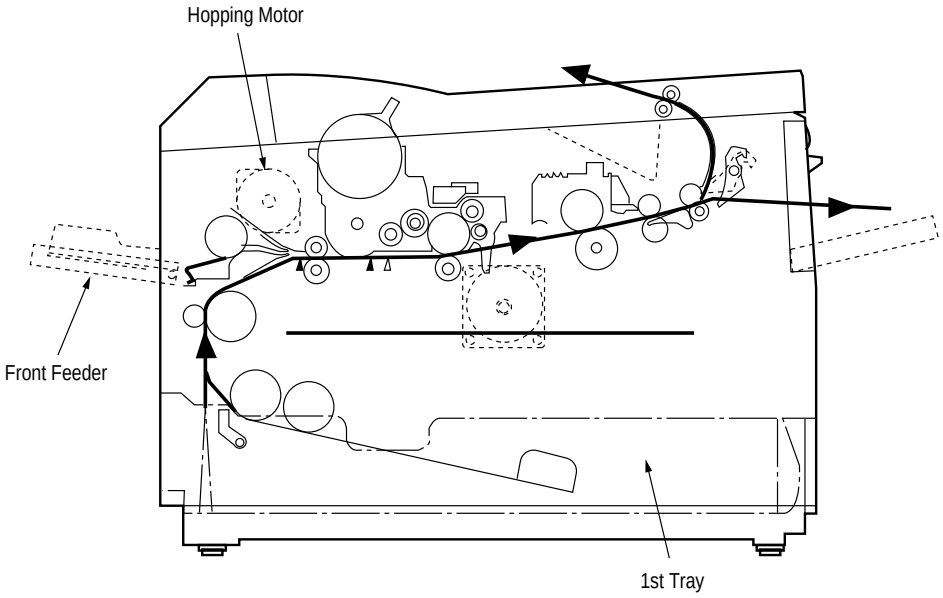
Figure 2-7

DUPLEX PRINTING TIMING CHART

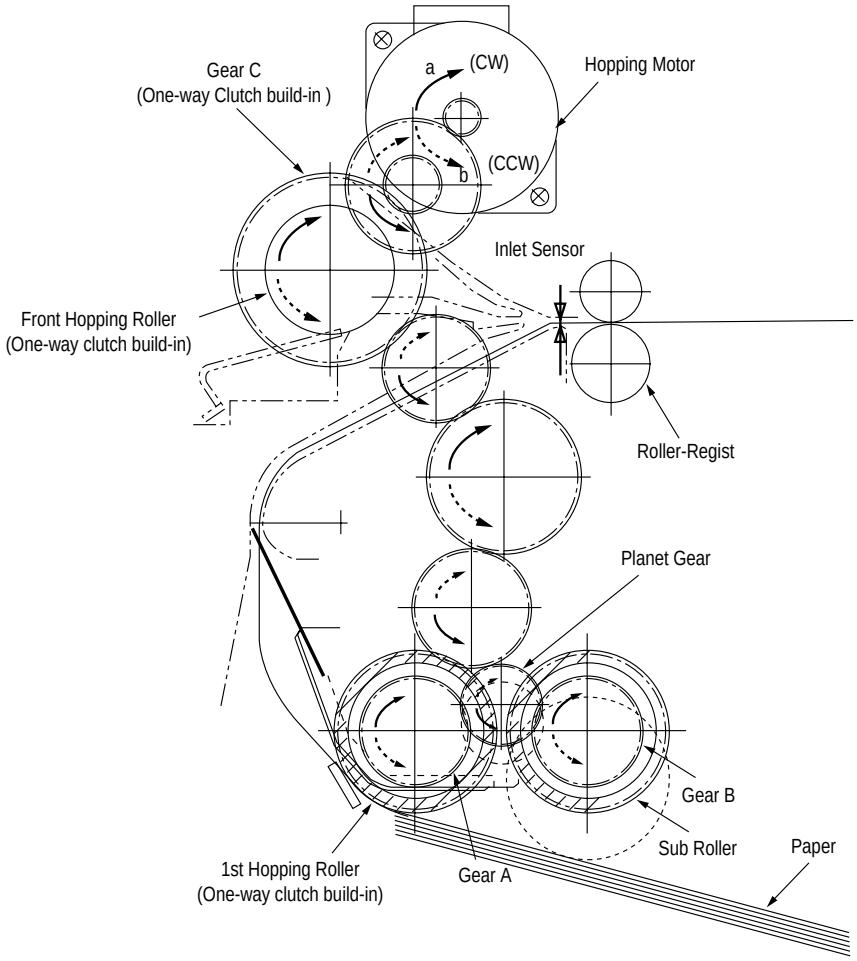
2.4.3 Process operation descriptions

(1) Hopping

Hoppings from the first tray and the front feeder are effected by a single hopping motor in the mechanism shown below.



Turning the Hopping motor in direction a (CW) drives the 1st Hopping Roller. Turning the Hopping motor in direction b (CCW) drives the Front Hopping Roller. Gear C and Hopping roller bult in one-way bearing, so that turning each of these gears in reverse direction will not be transmitted to the corresponding roller.



(a) Hopping from the 1st Tray

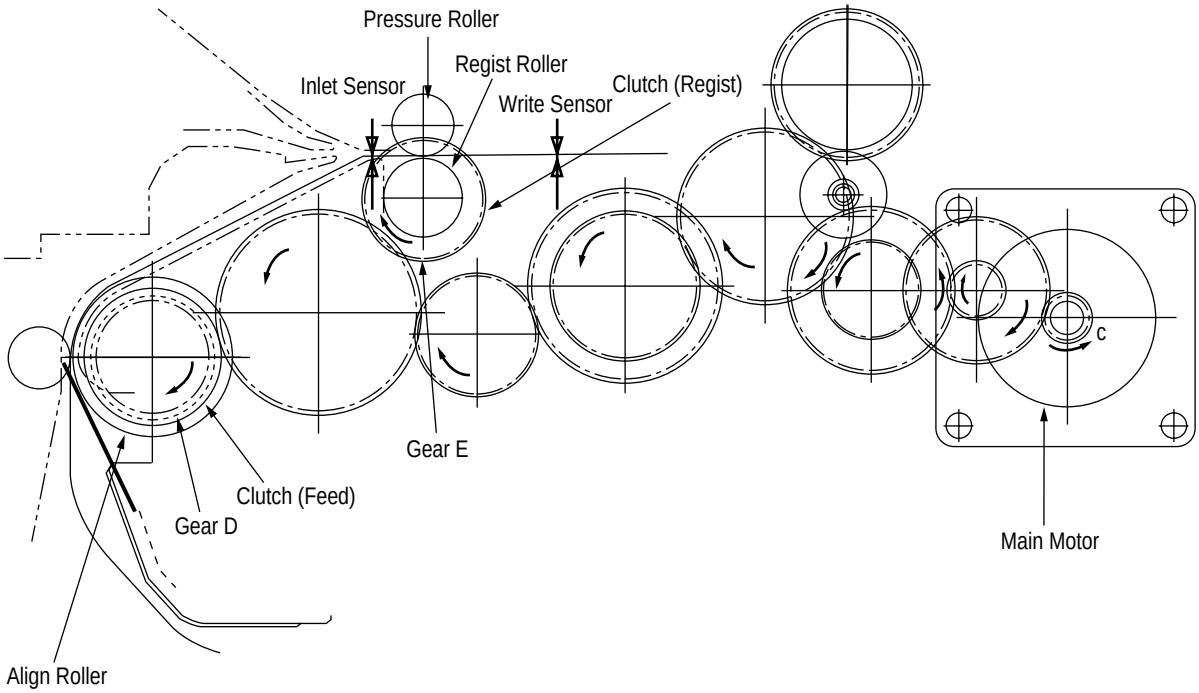
① Hopping
Rotating the Hopping Motor in direction a (CW) drives the 1st Hopping Roller and the Sub Roller then pick up a sheet of paper in the 1st tray. The Main Motor is always driven in direction c (CCW) on printing. After the paper fed approx. 30mm from the tray, the Clutch (Feed) drives the Align Roller to advance the paper until the Inlet Sensor turns on.

② Aligning
After turning on the Inlet Sensor, the paper fed by a predetermined length and choked up to the wedge space formed by the Regist Roller and the Pressure Roller so that to align the skew of paper.

③ During the paper fed from the 1st tray, the build in clutch of Gear C is idled and not to drive the Front Hopping Roller.

④ Feeding
After aligned the paper, the Hopping Motor turned off and stop hopping. Also the Clutch (Feed) turned off and the Align Roller idled freely. Then Clutch (Regist) turned on and the Regist Roller start to feed the paper. After the paper fed, the 1st Hopping Roller is freely idled by releasing build in one way clutch, also the Sub Roller is freely idled by escaping the Planet Gear.

⑤ Start printing. after the paper turns off the Write Sensor.



(b) Hopping from the Front Feeder

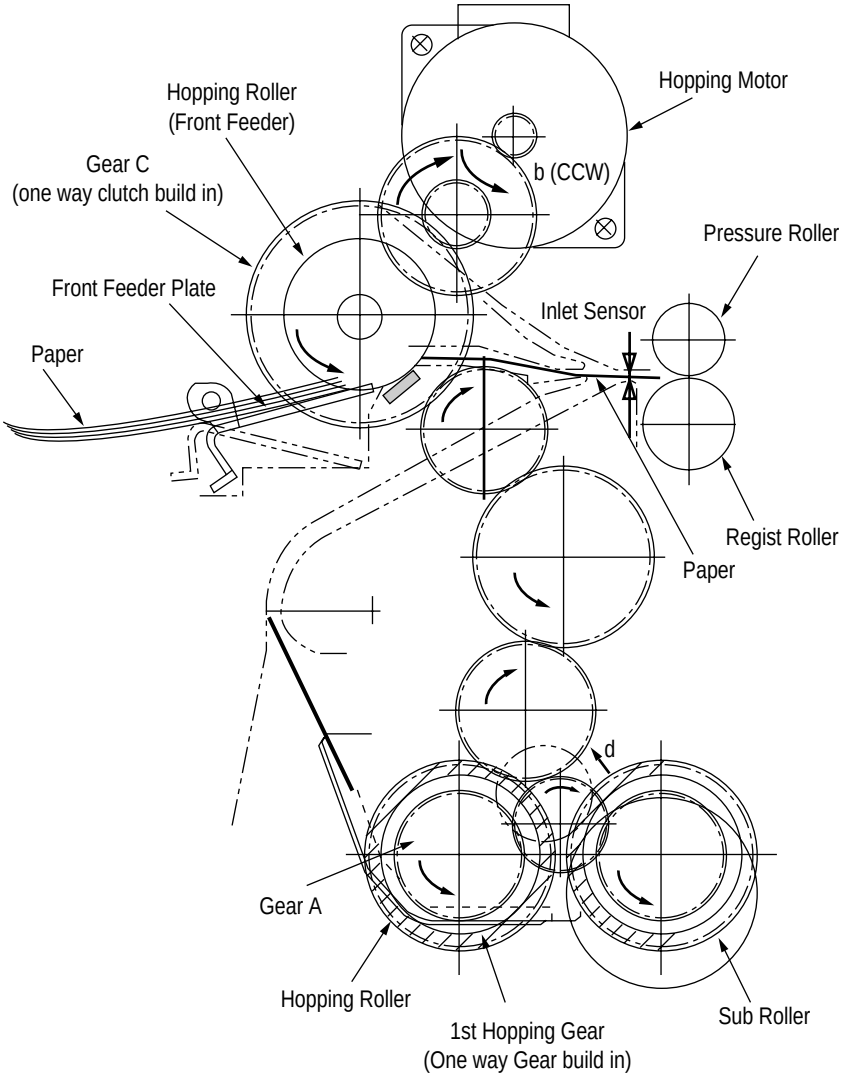
① Hopping
The Front Feeder Plate is normally locked at the lower position by the Release Lever and turn the Micro SW on. Top of the FF Cam which attached on end of the Front Hopping Shaft is normally located Upper position (0 to 30 degree : home position). Rotating the Hopping Motor in direction b (CCW) drives the Front Hopping Shaft and then attached the FF Cam and the Front Hopping Roller are driven. During the FF Cam rotated approx. 60 degree, the Release Lever was pushed and the Front Feeder Plate lifts up, then the Front Hopping Roller picks up a sheet of paper. At the FF Cam rotated approx. 180 degree, the Front Feeder Plate is pushed down and locked by the Release Lever again. At the FF Cam rotated approx. 275 degree the paper fed until the Inlet Sensor turns off.

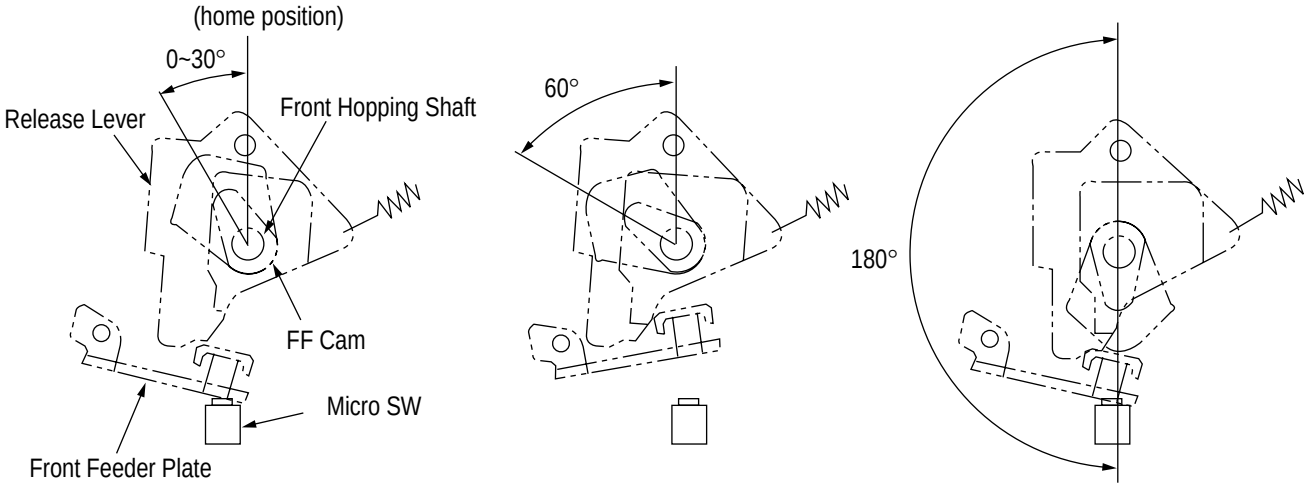
② Aligning
After turning on the Inlet Sensor, the paper fed by a predetermined length and choked up to the wedge space formed by the Regist Roller and the Pressure Roller so that to align the skew of paper.

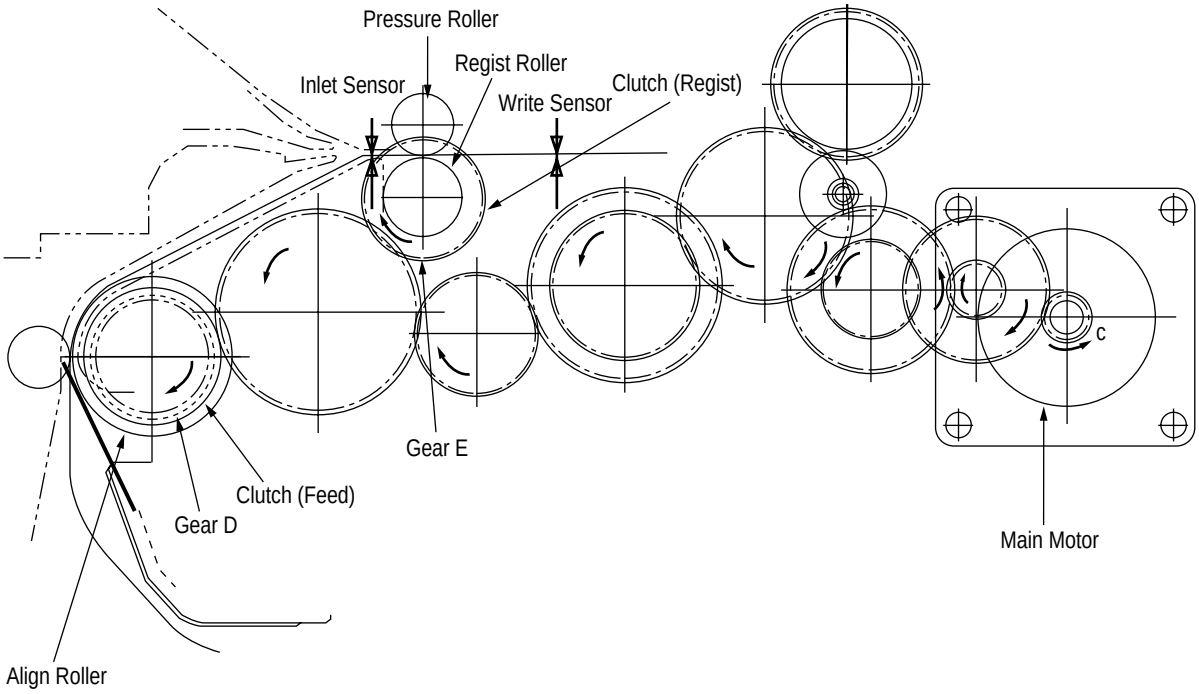
③ During the paper fed from the Front Feeder Plate, the one way clutch of 1st Hopping Roller is idled and not to drive the 1st Hopping Roller and the Sub Roller.

④ Feeding
After aligned the paper, the Hopping Motor turned off and stop hopping. Then Clutch (Regist) turned on and the Regist Roller start to feed the paper. After the paper fed, the Front Hopping Roller drives the Front Hopping Shaft and attached the FF Cam with small idle torque of build in one way clutch and when comes into the Release Lever, the one way clutch is slipped and the FF Cam is stopped at the upper position (home position). The Front Hopping Roller continuously idled up to the paper away.

⑤ Start printing. after the paper turns off the Write Sensor.


Hopping Roller
(Front Feeder)
Gear C
(one way clutch build in)
Front Feeder Plate
Paper
Hopping Motor
b (CCW)
Pressure Roller
Inlet Sensor
Regist Roller
Paper
d
Gear A
Hopping Roller
1st Hopping Gear
(One way Gear build in)
Sub Roller


(home position)
0~30°
Release Lever
Front Hopping Shaft
FF Cam
Micro SW
Front Feeder Plate
60°
180°



(2) Feeding

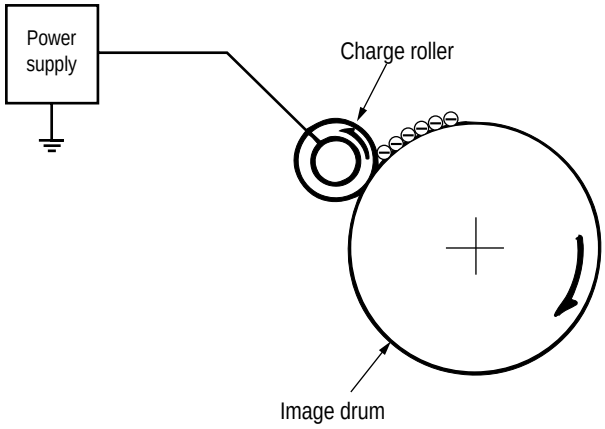
After the end of hopping, the pulse motor dedicated for driving the registration roller rotates to drive the registration roller. The driven registration roller advances the paper until it comes out of the registration roller.

When leading edge of the paper causes the paper sensor to turn on, the printing is started synchronously.

Although Gear D is always rotating due to an all-time rotation of the main motor in direction c, the regist roller would not rotate because the clutch (regist) is turned off.
After the completion of hopping, turn on the clutch (regist) to drive the regist roller. The regist roller would drive a paper until the paper has passed.

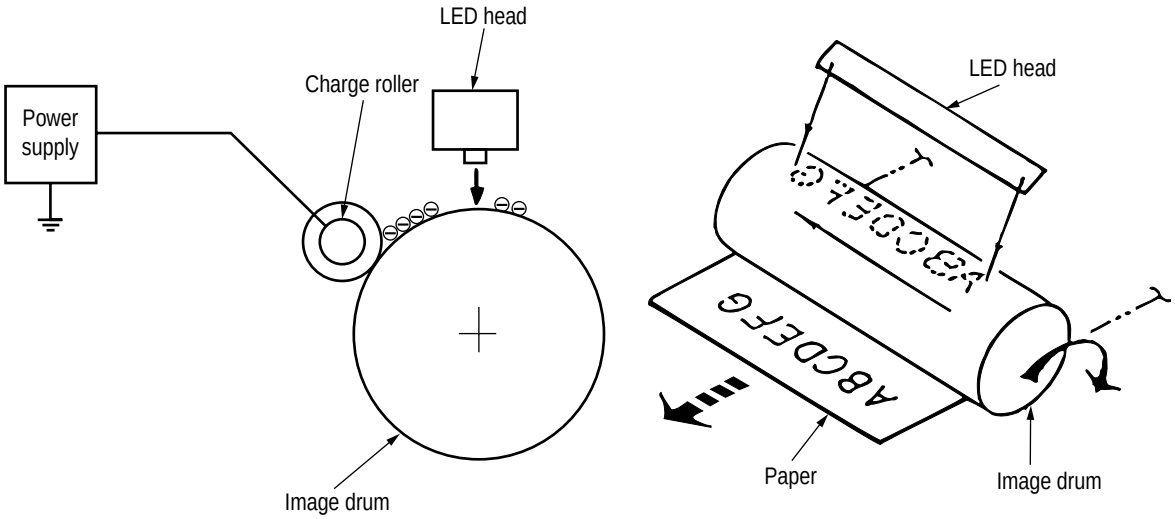
(3) Charging

Charging is effected by applying a DC minus voltage to the charge roller that is in contact with the image drum surface.



(4) Exposure

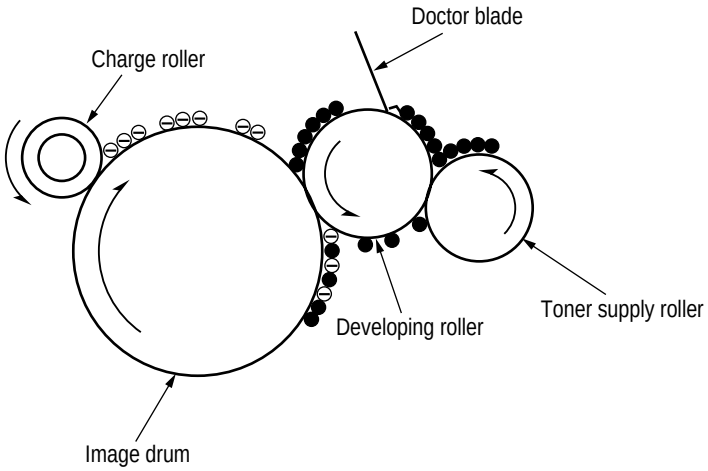
Light emitted from the LED head irradiates the image drum surface with negative charges. The surface potential of the irradiated part of the image drum drops, thereby forming an electrostatic latent image associated with the image signal.



(5) Developing

Toner is attracted to the electrostatic latent image on the image drum surface to convert it into a visible toner image. Developing takes place at the contact between the image drum and the developing roller.

① As the toner supply roller rotates while rubbing on the developing roller, a friction charge is generated between the developing roller and the toner, allowing the toner to be attracted to the developing roller. (The developing roller surface is charged positive and the toner, negative.)



② The toner attracted to the developing roller is scraped off by the doctor blade, forming a thin coat of toner on the developing roller surface.

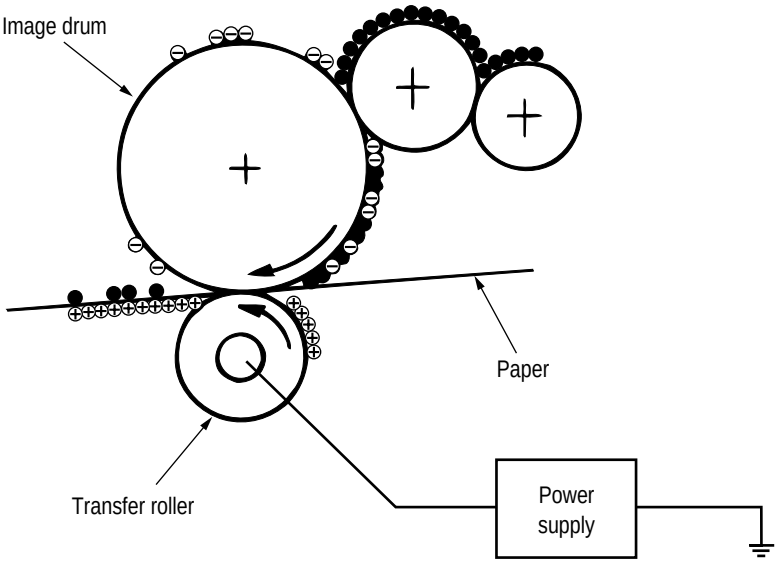
③ Toner is attracted to the exposed part (low-potential part) of the image drum at the contact between the image drum and the developing roller, making the electrostatic latent image visible.

(6) Transfer

The transfer roller is composed of conductive sponge material and is designed to make the image drum surface and the paper closely into contact.

Paper is placed over the image drum surface, and a positive charge, opposite in polarity to the toner, is applied to the paper from its reverse side.

The application of a high positive voltage from the power supply to the transfer roller causes the positive charge induced to the transfer roller surface to be transferred to the paper at the contact between the transfer roller and the paper. As a results, toner charged negative that is attracted to the image drum surface is transferred to the upper side of the paper by the positive charge on the lower side of the paper.

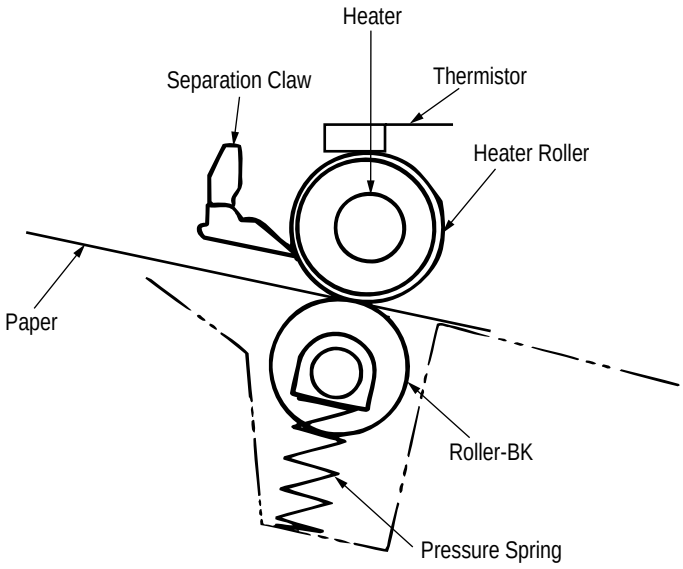


(7) Fusing

After the end of the transfer, the unfused toner image is fused on the paper under heat and pressure as it passes between the heater roller and the back-up roller. The heater roller with a Teflon coating incorporates a 750W heater (Halogen lamp), which heats the heat roller.

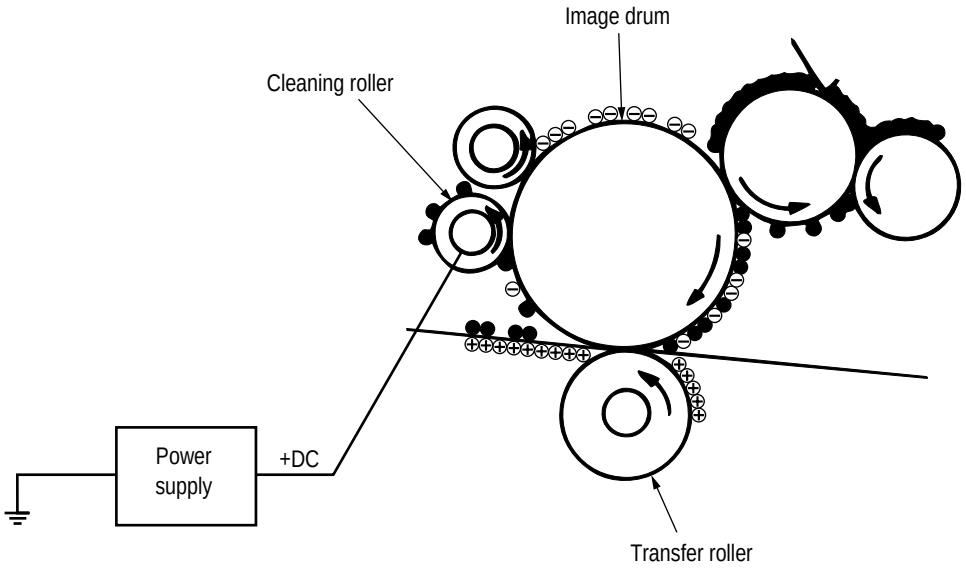
A thermistor which is in contact with the heater roller regulates the heater roller at a predetermined temperature (about 180 ~ 200°C). A safety thermostat cuts off voltage supply to the heater by opening the thermostat in the event of abnormal temperature rises.

The back-up roller is held under a pressure of 5 kg from the pressure spring at each side.



(8) Cleaning

After the end of the transfer, residual toner on the image drum is attracted to the cleaning roller temporarily by static electricity to clean the image drum surface.



(9) Cleaning of rollers

The charge roller, transfer roller and cleaning roller are cleaned in the following cases:

- In warming up at power-on time
- In warming up after the cover is opened and closed
- When the number of accumulated sheets is 10 or more and the printout operation ends

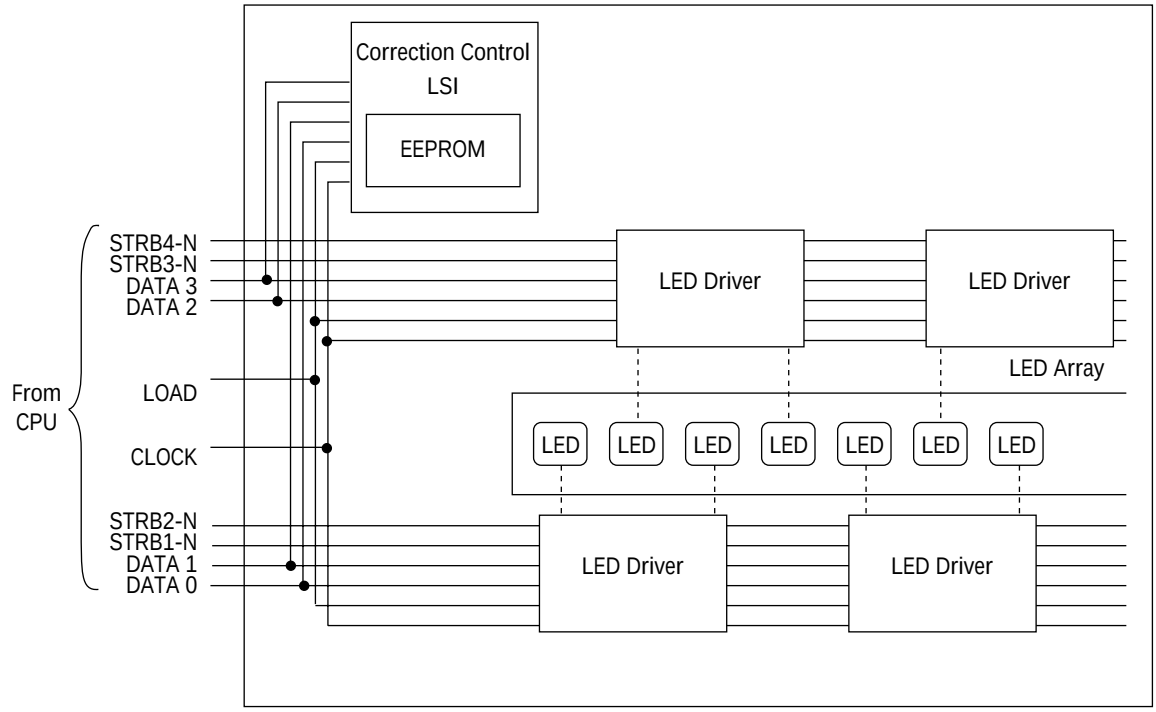
Changes in bias voltage applied to each roller move adhesive toner from the roller to the image drum and return it to the developer.

2.3.4 Revision of LED Head Illumination

An LED correcting head, which is capable of correcting the illumination of the LED for each dot, is being used in this printer. LED illumination correction function of 16 steps is carried out by using an EEPROM which is installed in the LSI that maintains the LED illumination correction values, and an LED correction drivers together as a pair.

The LED correcting head consists of the correction control LSI , LED drivers , and an LED array. The block diagram of the LED correcting head is shown below.

(1) Both sides wire-bonding head

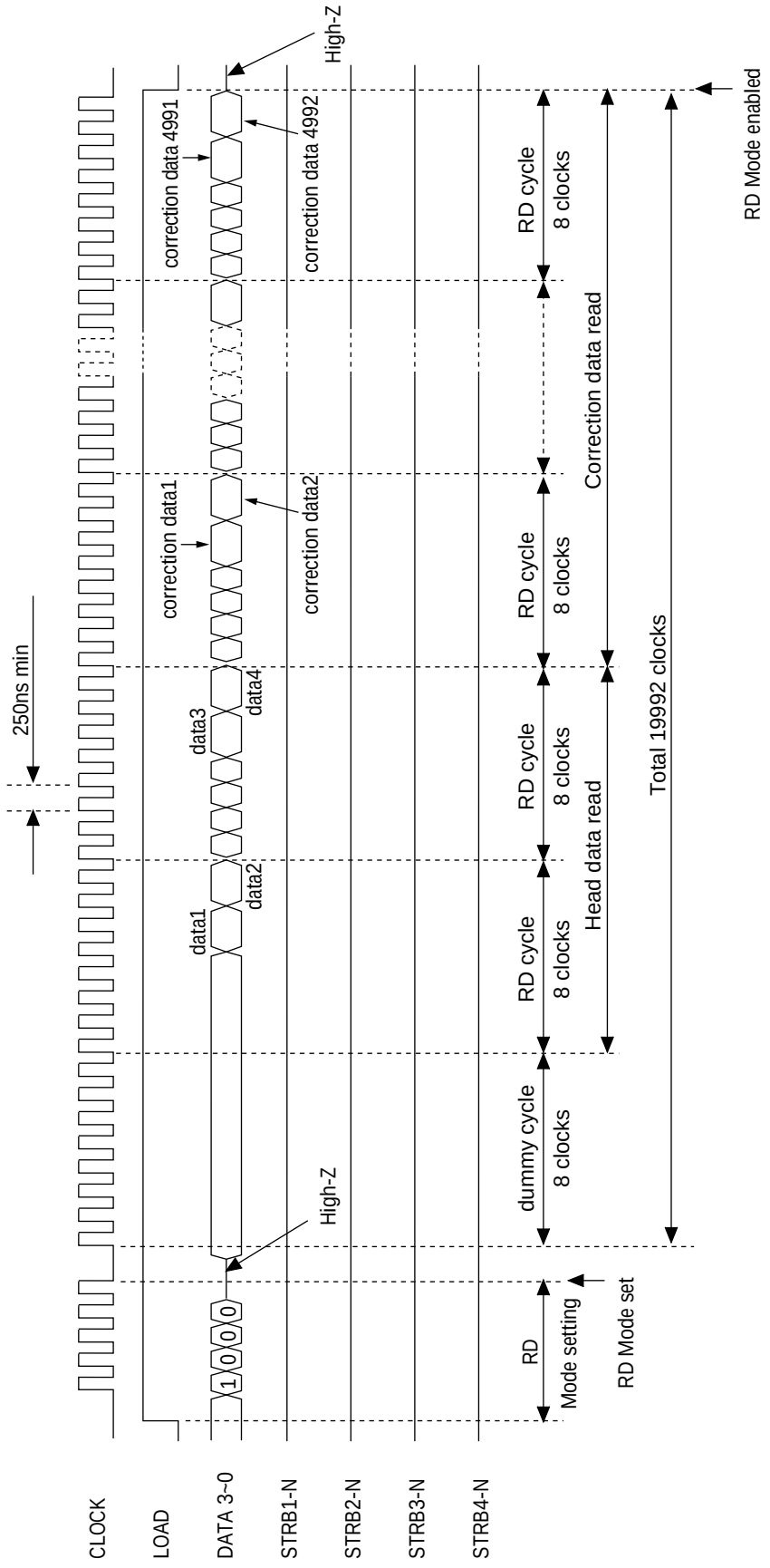


In OKIPAGE 20/ OKIPAGE 20n, the correction control of LED head is excuted direction by CPU. The procedure is as follows

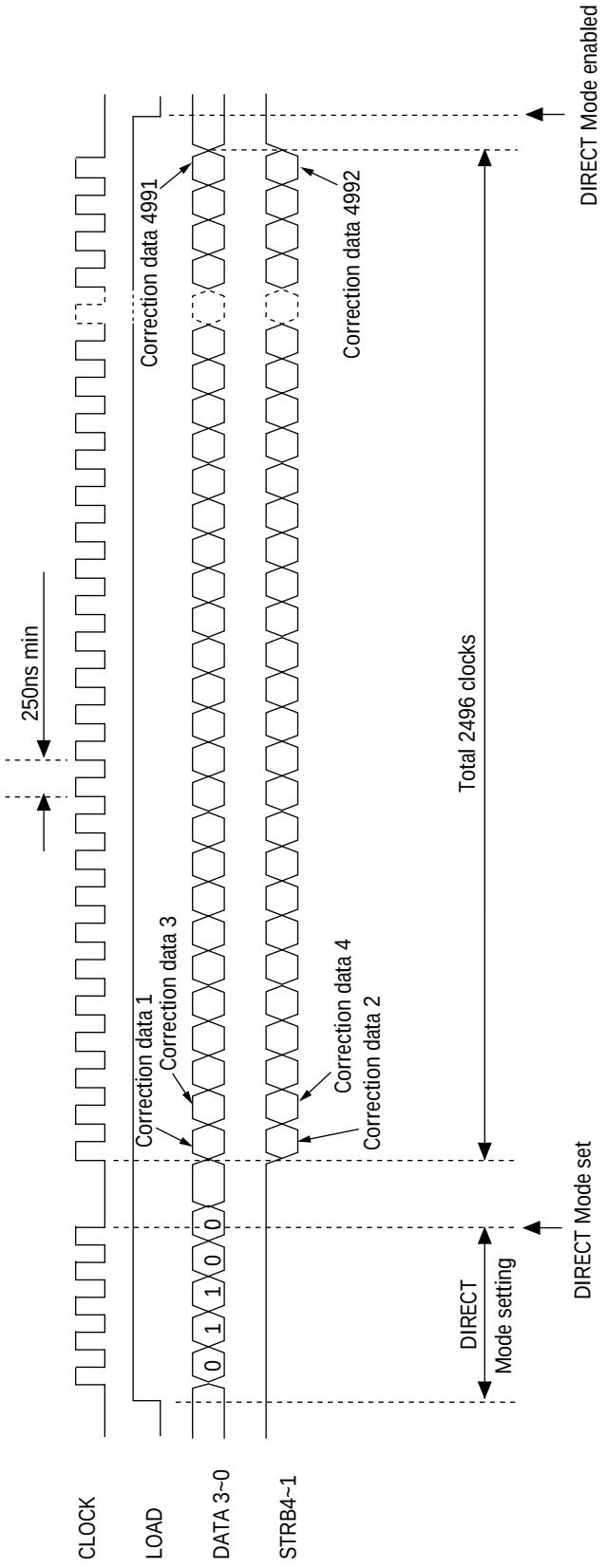
(i) LED head is set to the correction control read mode and all correction data stored in EEPROM within the correction control LSI are read by CPU, and stored temporarily in the memory.

(ii) Next, LED head is set to the correction control direct mode and the correction data stored temporarily in the memory is transferred directly to the LED driver.

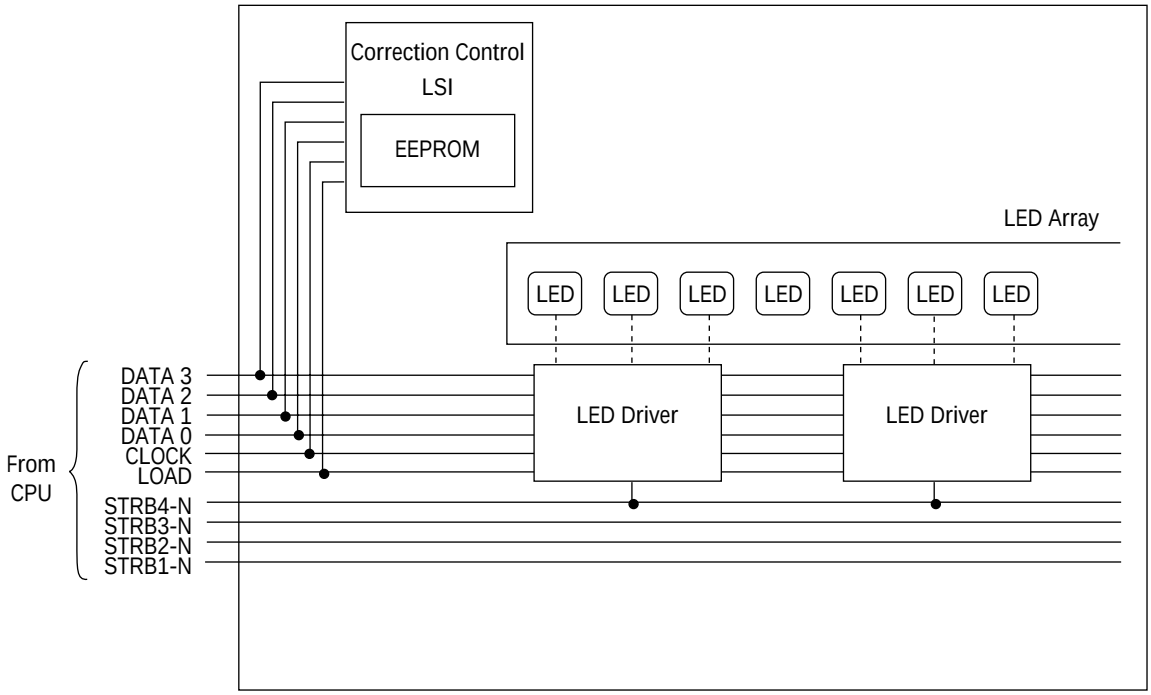
(i) Read of correction data



(ii) Transfer of correction data to head driver correction data



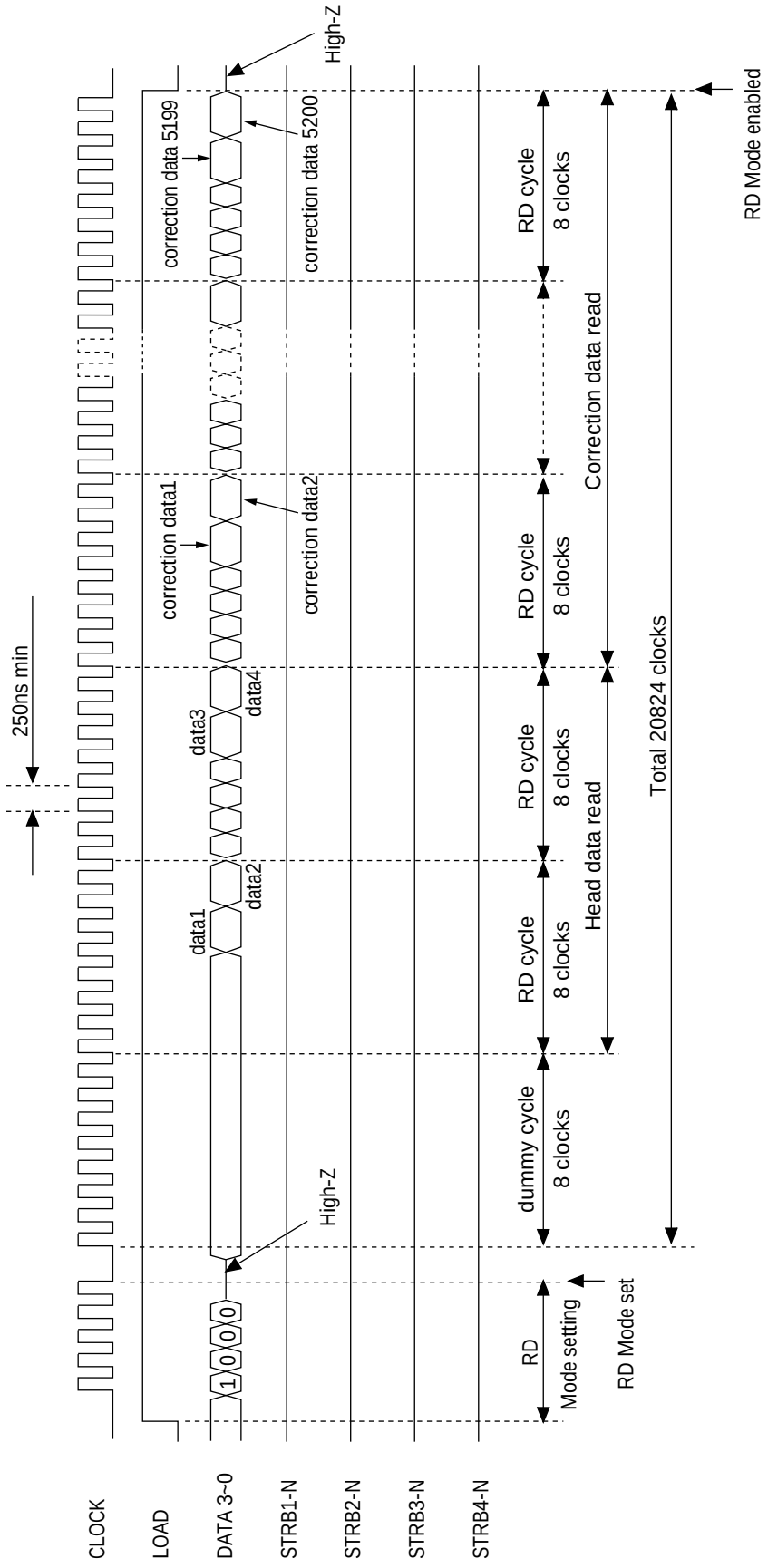
(2) One side wire-bonding head



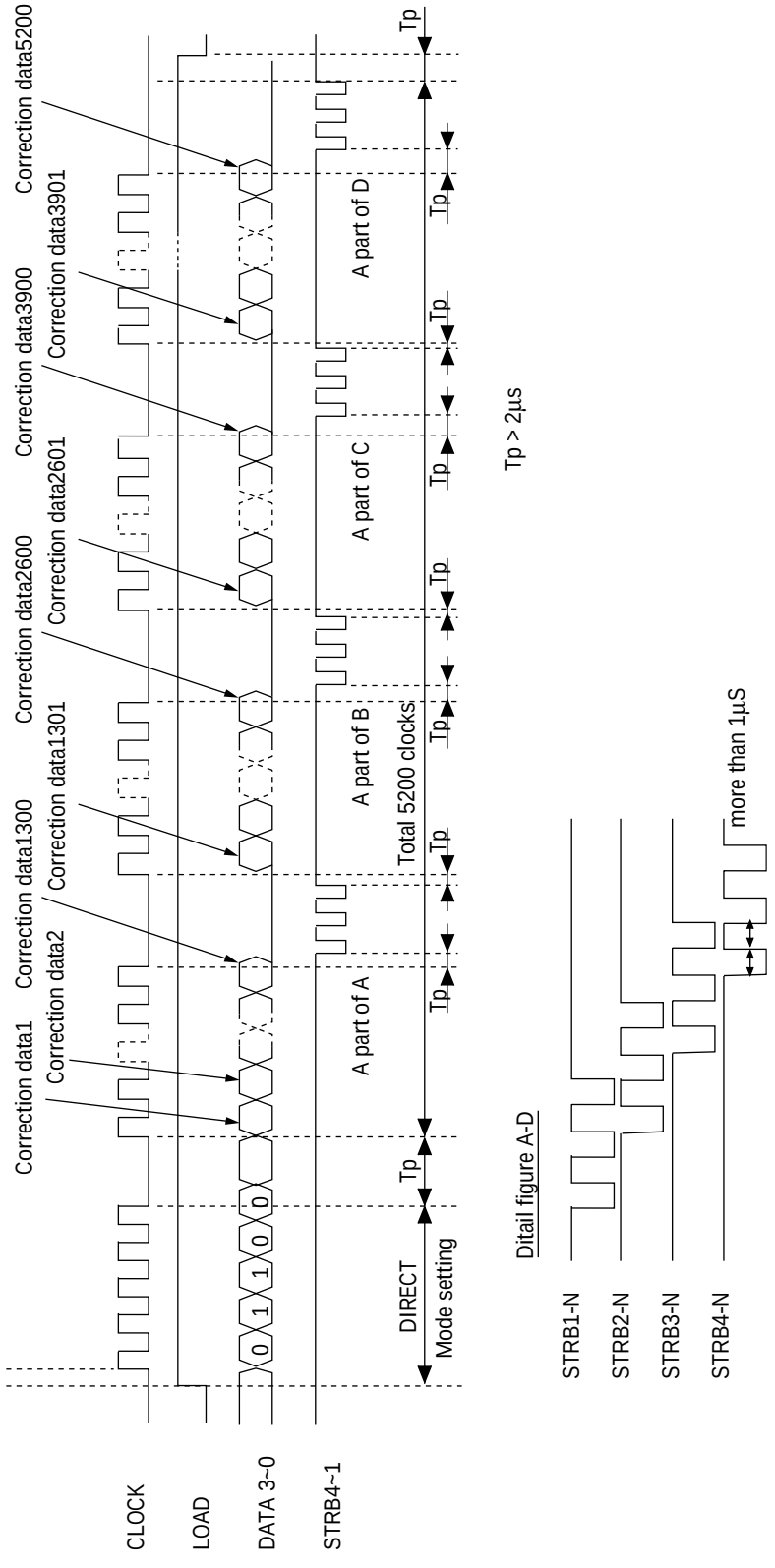
(i) LED head is set to the correction control read mode and all correction data stored in EEPROM within the correction control LSI are read by CPU, and stored temporarily in the memory.

(ii) Next, LED head is set to the correction control direct mode and the correction data stored temporarily in the memory is transferred directly to the LED driver.

(i) Read of correction data



(ii) Transfer of correction data to head driver correction data



The LED driver corrects the LED illumination by controlling the LED current. The LED illumination can be set in 16 steps, with 7 steps in the direction of illumination increase in relation to the standard value, and 8 steps in the direction of decrease. For this reason, the LED correction data is a 4-bit data for each dot.

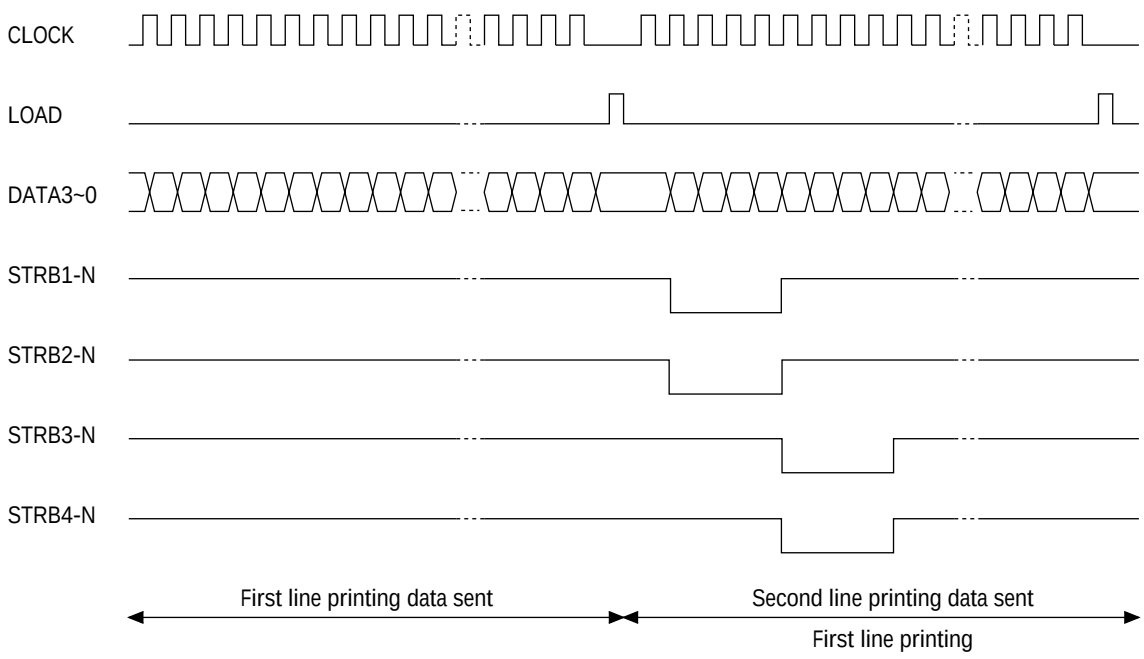
The relationship between the LED correction data and LED current correction steps with the LED driver used in an LED head is shown below.

LED Correction Data

Corretion Data				Correction Step	Correction Mode
msb b3	b2	b1	lsb b0		
1	0	0	0	+16%	↑
0	1	1	1	+14%	↑
0	1	1	0	+12%	Correction by
0	1	0	1	+10%	increasing
0	1	0	0	+8%	illumination
0	0	1	1	+6%	↑
0	0	1	0	+4%	↑
0	0	0	1	+2%	↑
0	0	0	0	0%	No correction
1	1	1	1	-2%	↓
1	1	1	0	-4%	↓
1	1	0	1	-6%	Correction by
1	1	0	0	-8%	decreasing
1	0	1	1	-10%	illumination
1	0	1	0	-12%	↓
1	0	0	1	-14%	↓

The printing operation timing chart is shown below.

Normal Mode Printing Timing Chart



The printing operation is carried out in normal mode. Under ordinary circumstances such as when the power is turned on or when LOAD signal level is low, the normal mode is enabled.

The printing operation is carried out in the following sequence. First, the printing data DATA3 through DATA0 are stored, sequentially shifted, in the shift registers of the LED drivers, by the printing data synchronous clock, CLOCK. Then the printing data stored in shift registers are latched by the high level pulse of LOAD. The latched printing data turns the LEDs on by STRB1-N through STRB4-N and actuates printing.

2.4 Paper Jam Detection

The paper jam detection function supervises the paper state at power-on time and during printing. In the event that the following state occurs, this function interrupts the printing process. If any of the following errors is presented, recovery printing will be performed by removing the jammed paper (namely by opening the upper cover, removing the jammed paper and closing the upper cover).

Error	Cause of error
Paper input jam	• At power-on time, the paper is placed at the inlet sensor. • After hopping operation is attempted three times, the leading part of the paper does not reach the inlet sensor.
Paper feed jam	• At power-on time, the paper is placed at the paper sensor. • The leading part of the paper does not reach the paper sensor within a predetermined distance after the paper has reached the inlet sensor. • The traiding part of the paper does not pass over the paper sensor within a predetermined distance after the leading edge of the paper has passed over the paper sensor. • The leading part of paper does not reach the outlet sensor within a predetermined distance after the paper has reached the paper sensor.
Paper exit jam	• At power-on time, the paper is placed on the outlet sensor. • The paper does not pass over the outlet sensor within a predetermined after the leading part of the paper has reached the outlet sensor. • The paper size check with the manual feed specified considers the reference size as free size.
Paper size error	• The size of the paper is supervised by the inlet sensors 1. It is detected that the paper does not pass over the inlet sensor 1 within predetermined range of distance. • The inlet sensor 2 detects that the size of the loaded paper is A4 or larger, or smaller than A4. The detected paper size differs from the paper size set by command or menu. • The paper size check with the manual feed specified considers the reference size as free size.

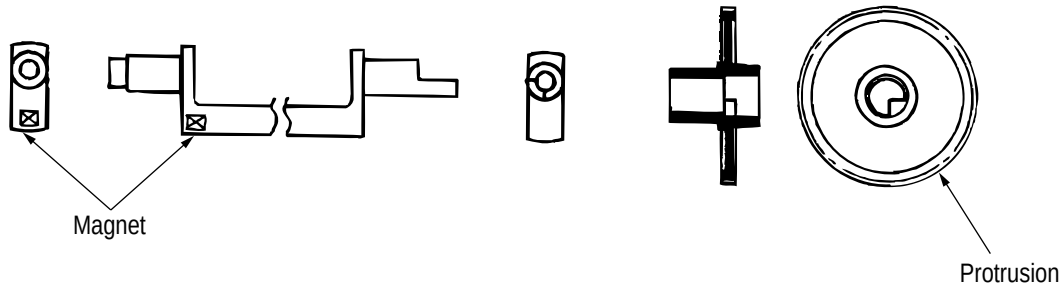
2.5 Cover Open

When the stacker cover is opened, the cover open microswitch on the Power Supply Unit (High voltage) is turned off to cut the supply of +30V to the high voltage power supply circuit. As a result, all high-voltage outputs are interrupted. At the same time, the CVOPN signal is sent to the control board to notify it of the off state of the microswitch, and the Main board performs the cover open processing.

2.6 Toner Low Detection

- Composition

  The device consists of the stirring gear which rotates at a constant rate, the stirring bar and the magnet on the stirring bar. The stirring bar rotates through the link on the protrusion in the stirring gear.



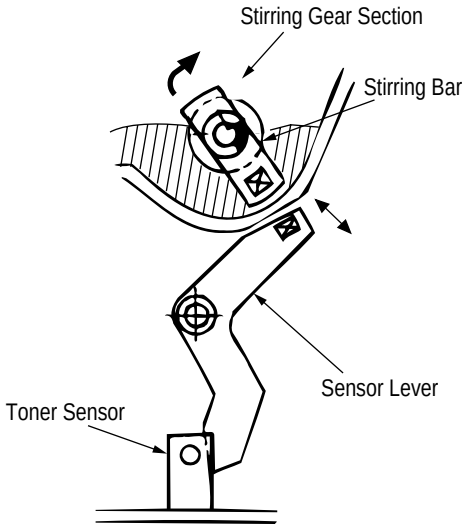
Stirring Bar Stirring Gear

- Operation

  Toner Low is detected by monitoring the time interval of the encounter of the magnet set on the sensor lever and the magnet on the stirring bar.

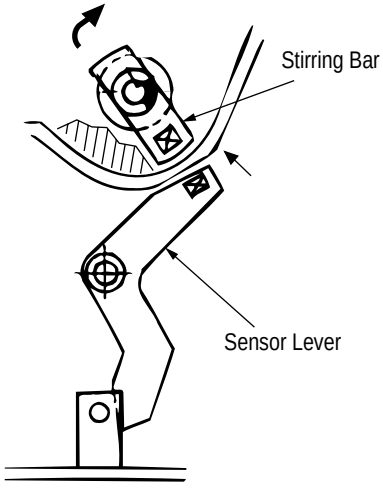
Operation during toner full state

- The stirring bar rotates due to the interlocking with the stirring gear.
- Even when the magnet on the stirring bar reaches the maximum height, since the other side is being dipped in the toner, the stirring bar is pushed by the stirring gear.

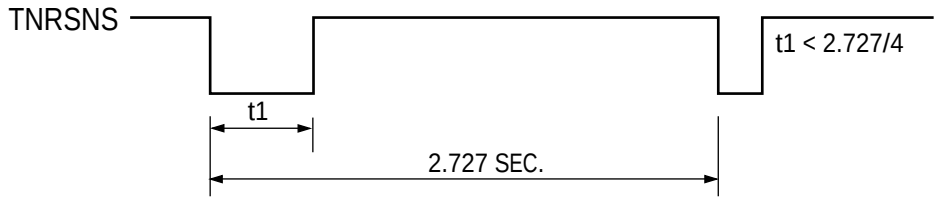


Operation during toner low state

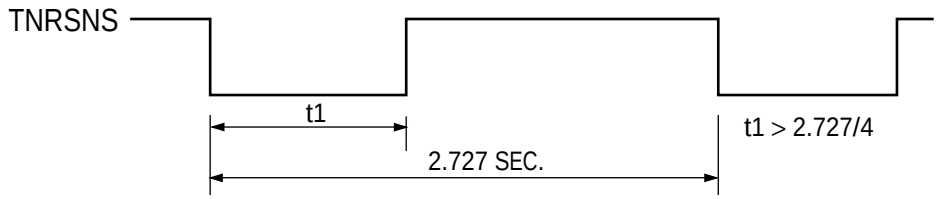
- When the stirring bar reaches the maximum height, since there is no resistance provided by the toner on the other side, it falls to the minimum height due to its own weight. Because of this, the time interval during which it is in encounter with the magnet of the sensor lever becomes long. By monitoring this time interval, toner low can be detected.



TONER FULL state



TONER LOW state



- When the toner low state is detected 2 times consecutively, Toner Low is established.
- When the toner full state is detected 2 times consecutively, Toner Low is cancelled.
- When there is no change with the toner sensor for 2 cycles (2.727 sec. x 2) or more, then the Toner Sensor Alarm is activated.
- The toner sensor is not monitored while the drum motor is in halt.

2.7 Stacker-full Detection

The sensor (interlocked with the lever) at the paper outlet to the stacker detects a stacker-full state (about 250 sheets) and stops printing of the ensuing pages.

2.8 Page Size Detection

The four tab pieces are driven according to the setting position of the paper guide through the cam interlocked with the paper guide of the paper cassette.

When the paper cassette is inserted into the printer, the state of the tab pieces is detected by the microswitch to recognize the paper size.

State of Microswitches				Paper size
SW1	SW2	SW3	SW4	
0	1	1	1	Letter
0	1	0	1	Executive
0	0	1	1	A4
1	1	1	0	Legal 14
1	0	1	1	Legal 13
1	1	0	1	B5
1	1	0	0	A5
1	0	0	1	A6 (Not available)

3. PARTS REPLACEMENT

The section explains the procedures for replacement of parts, assemblies, and units in the field. Only the removal procedures are explained here. Reverse the procedure for the installation.

3.1 Precautions for Parts Replacement

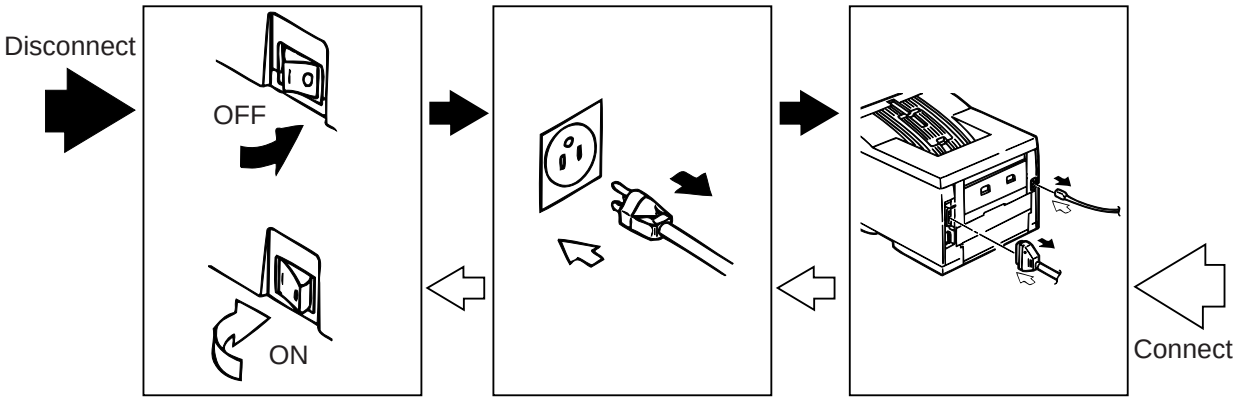
(1) Before starting parts replacement, remove the AC cable and interface cable.

(a) Remove the AC cable in the following procedure:

i) Turn off ("o") the power switch of the printer
ii) Disconnect the AC inlet plug of the AC cable from the AC receptacle.
iii) Disconnect the AC cable and interface cable from the printer.

(b) Reconnect the printer in the following procedure.

i) Connect the AC cable and interface cable to the printer.
ii) Connect the AC inlet plug to the AC receptacle.
iii) Turn on ("I") the power switch of the printer.



(2) Do not try disassembly as long as the printer is operating normally.

(3) Do not remove unnecessary parts: try to keep disassembly to a minimum.

(4) Use specified service tools.

(5) When disassembling, follow the determined sequence. Otherwise, parts may be damaged.

(6) Since screws, collars and other small parts are likely to be lost, they should temporarily be attached to the orginal positions.

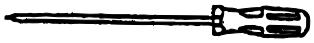
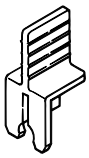
(7) When handling ICs such as microprocessors, ROM and RAM, and circuit boards, do not wear gloves that are likely to generate static electricity.

(8) Do not place printed circuit boards directly on the equipment or floor.

[Service Tools]

Table 3-1 shows the tools required for field replacement of printed circuit boards and units.

Table 3-1 Service Tools

No.	Service Tools		Q' ty	Place of use	Remarks
1		No. 1-100 Philips screwdriver	1	2~2.5 mm screws	
2		No. 2-200 Philips screwdriver, Magnetized	1	3~5 mm screws	
3		No. 3-100 screwdriver	1		
4		No. 5-200 screwdriver	1		
5		Digital multimeter	1		
6		Pliers	1		
7		Handy cleaner	1		
8		LED Head cleaner P/N 4PB4083-2248P1	1	Cleans LED head	
9		Connector remover P/N 4PP4076-5395P1	1	Disconnect connector	
10		Holder-TR Eject P/N 40596701	1	For removing ROLLER-Transfer	

3.2 Parts Layout

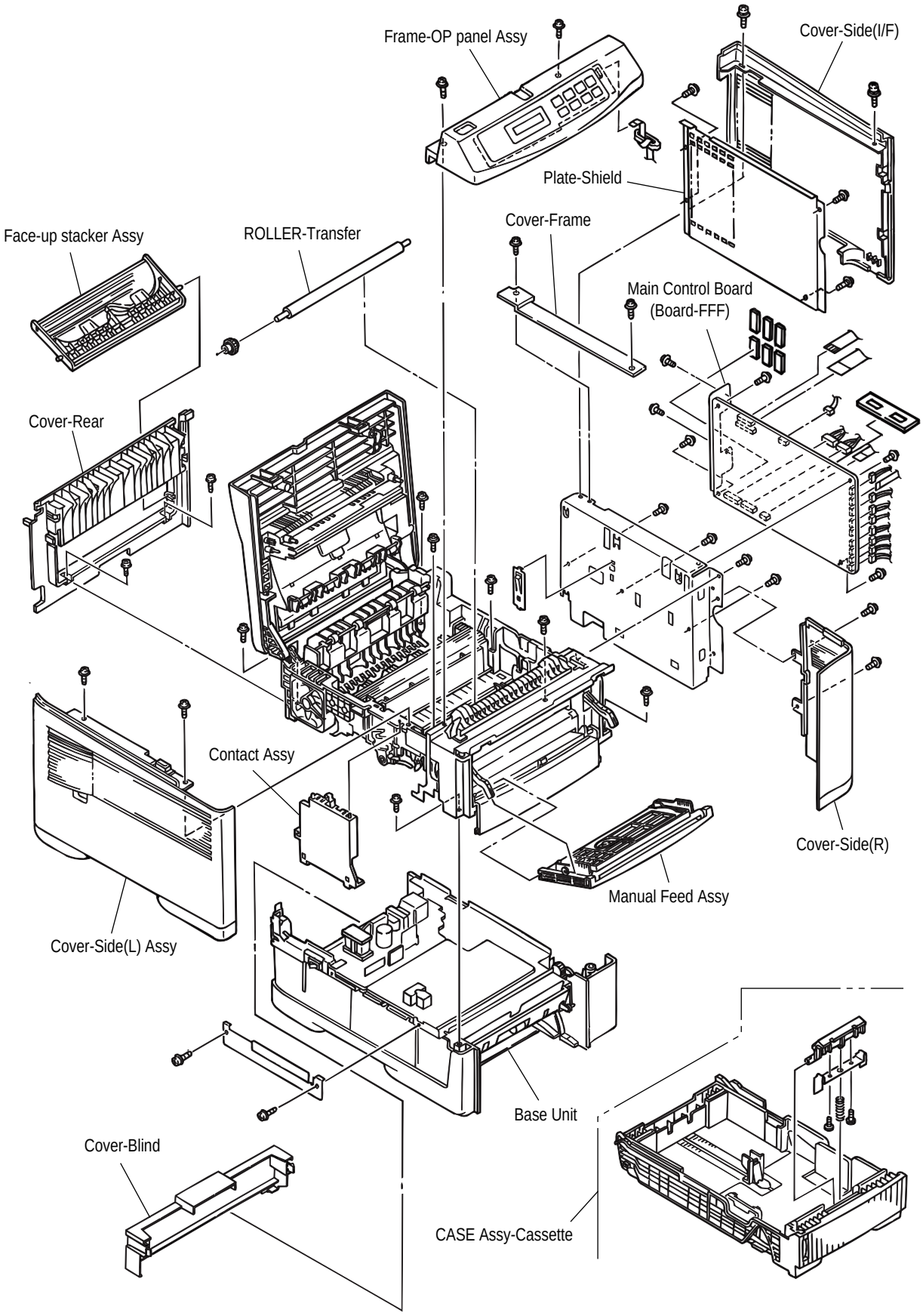


Figure 3-1

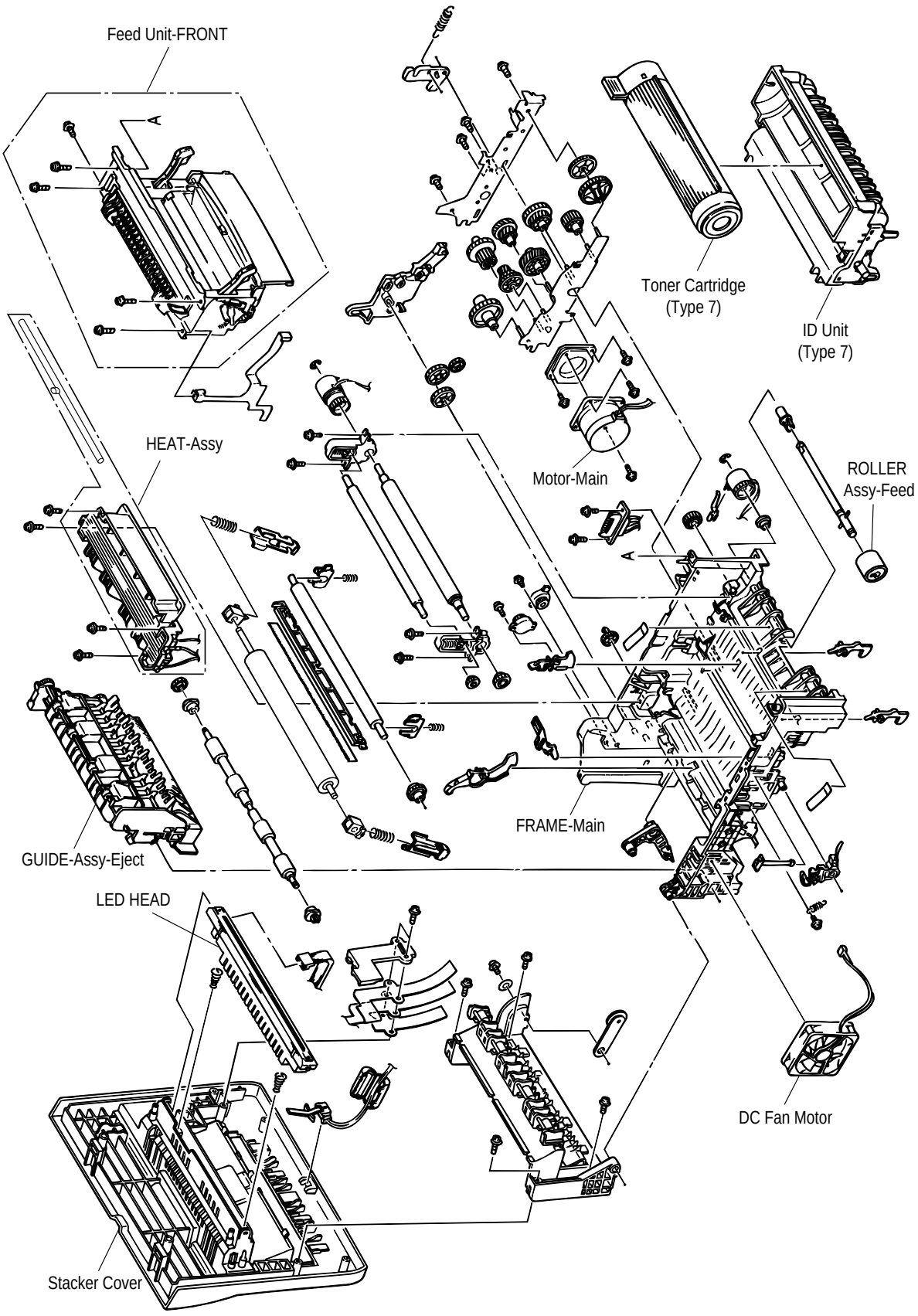

Feed Unit-FRONT
Toner Cartridge
(Type 7)
ID Unit
(Type 7)
HEAT-Assy
Motor-Main
ROLLER
Assy-Feed
FRAME-Main
GUIDE-Assy-Eject
LED HEAD
DC Fan Motor
Stacker Cover

Figure 3-2

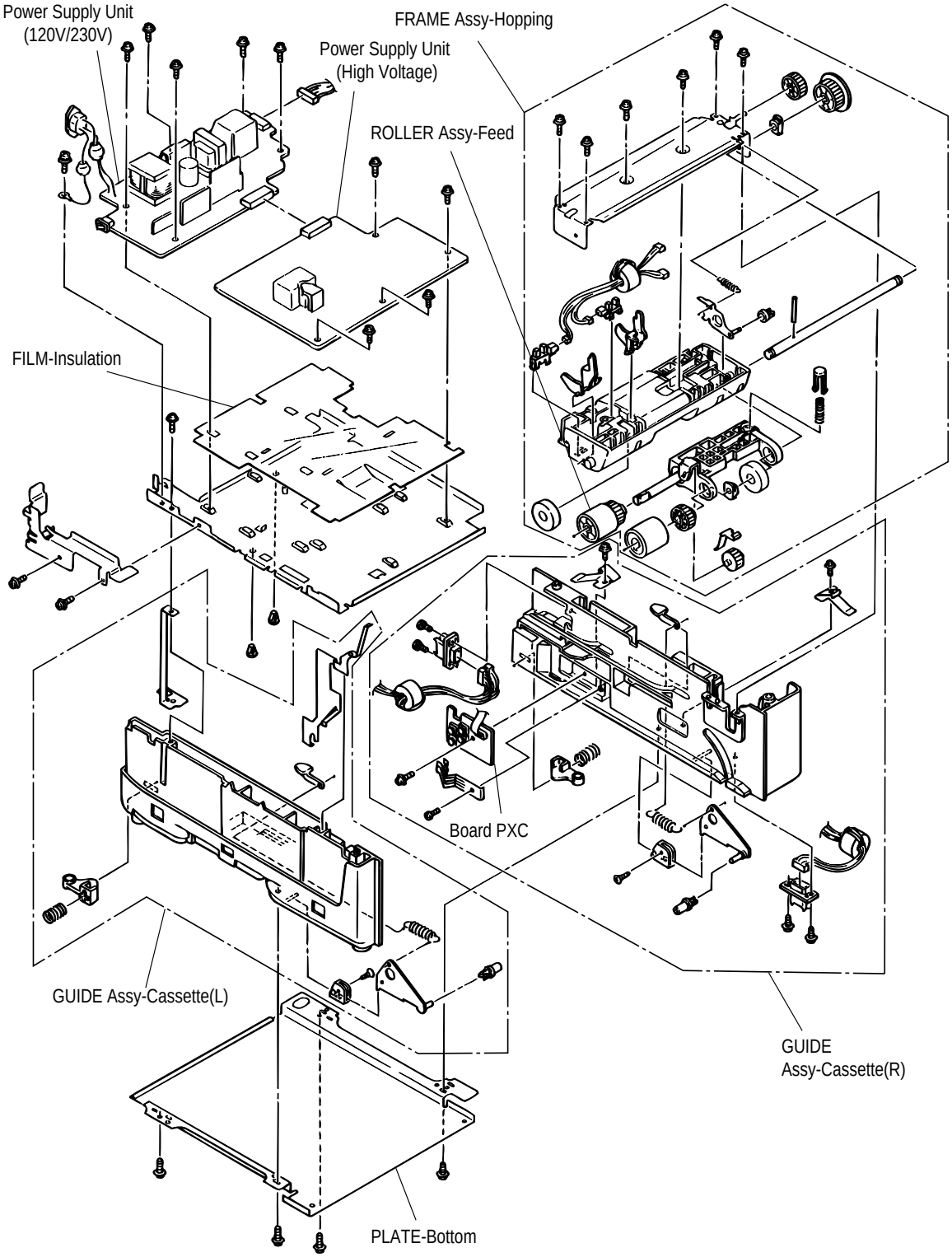
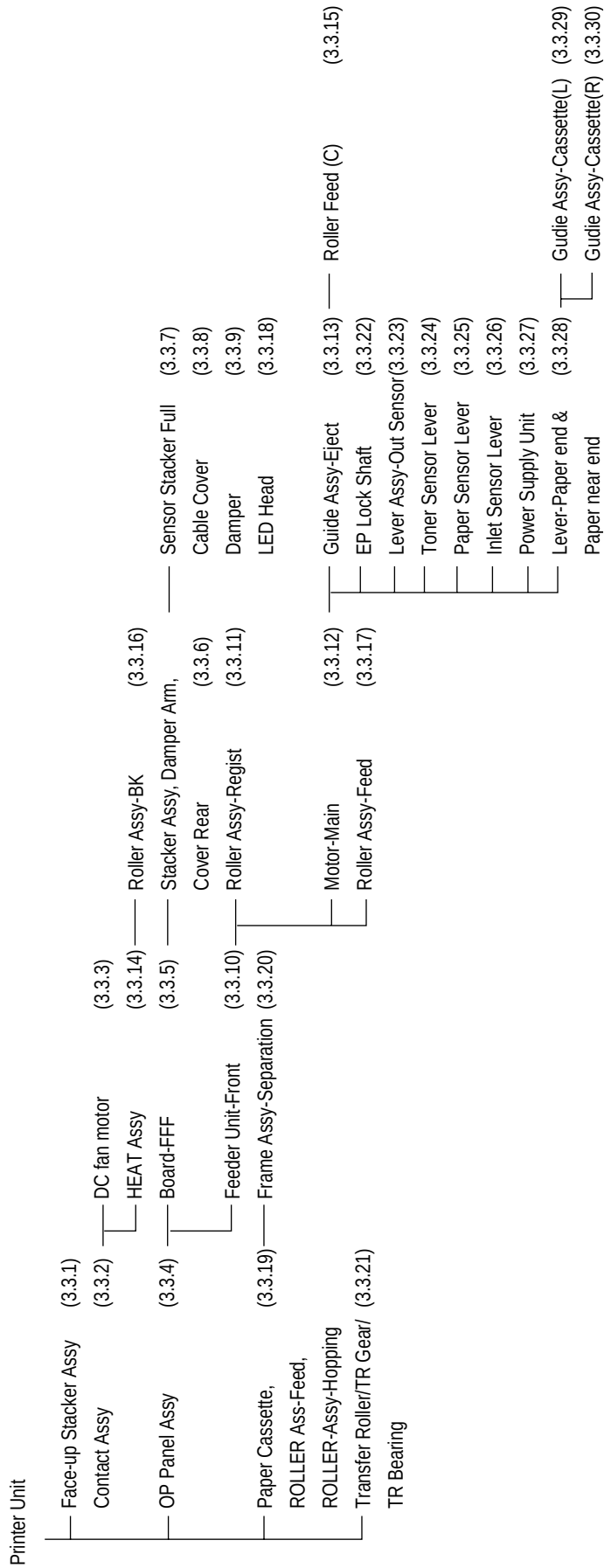

Power Supply Unit
(120V/230V)
Power Supply Unit
(High Voltage)
FRAME Assy-Hopping
ROLLER Assy-Feed
FILM-Insulation
Board PXC
GUIDE Assy-Cassette(L)
GUIDE
Assy-Cassette(R)
PLATE-Bottom

Figure 3-3

3.3 How to Change Parts

This section explains how to change parts and assemblies appearing in the disassembly diagram below.

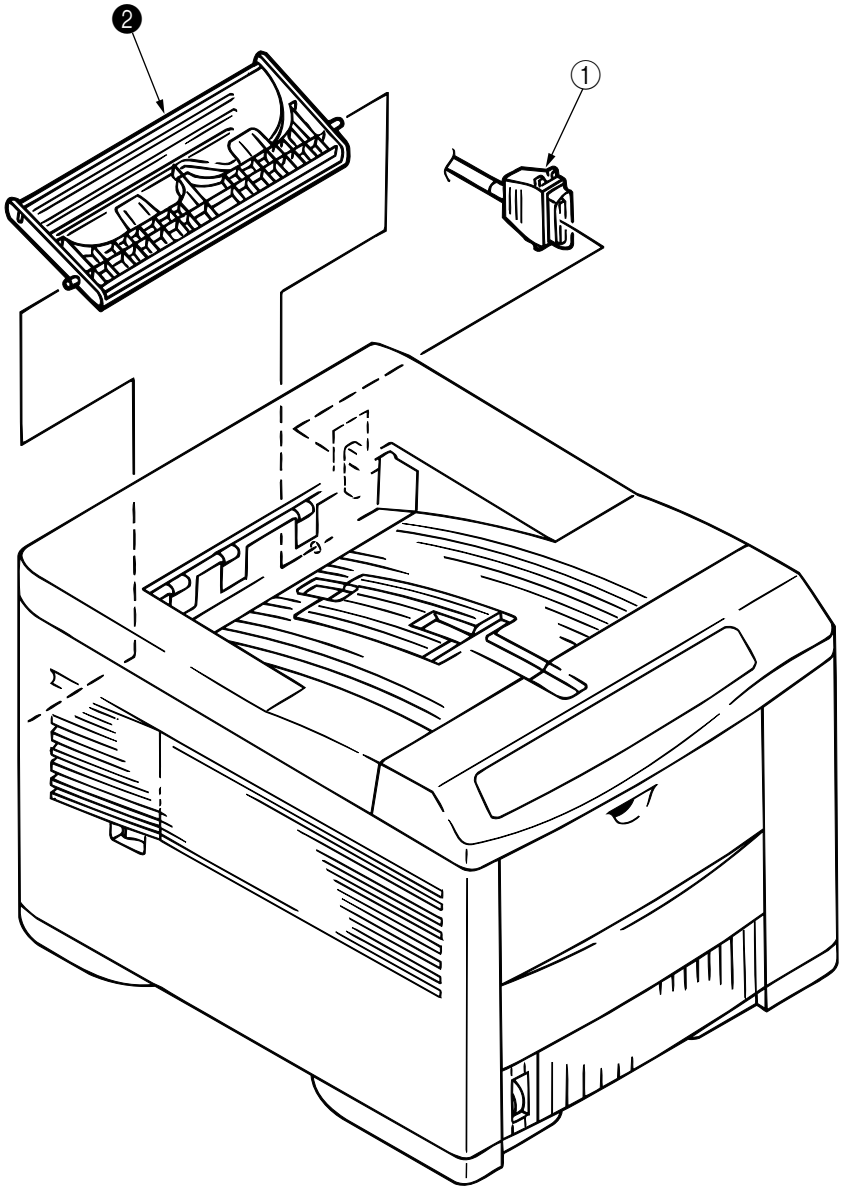


3.3.1 Face -up Stacker Assy

(1) Turn off the AC Power Switch and unplug the AC Power Cord from the outlet.

(2) Disconnect the Interface Cable ①.

(3) Open the face-up stacker assy ❷, unhook the right and left projections, and then remove the face-up stacker assy ❷.

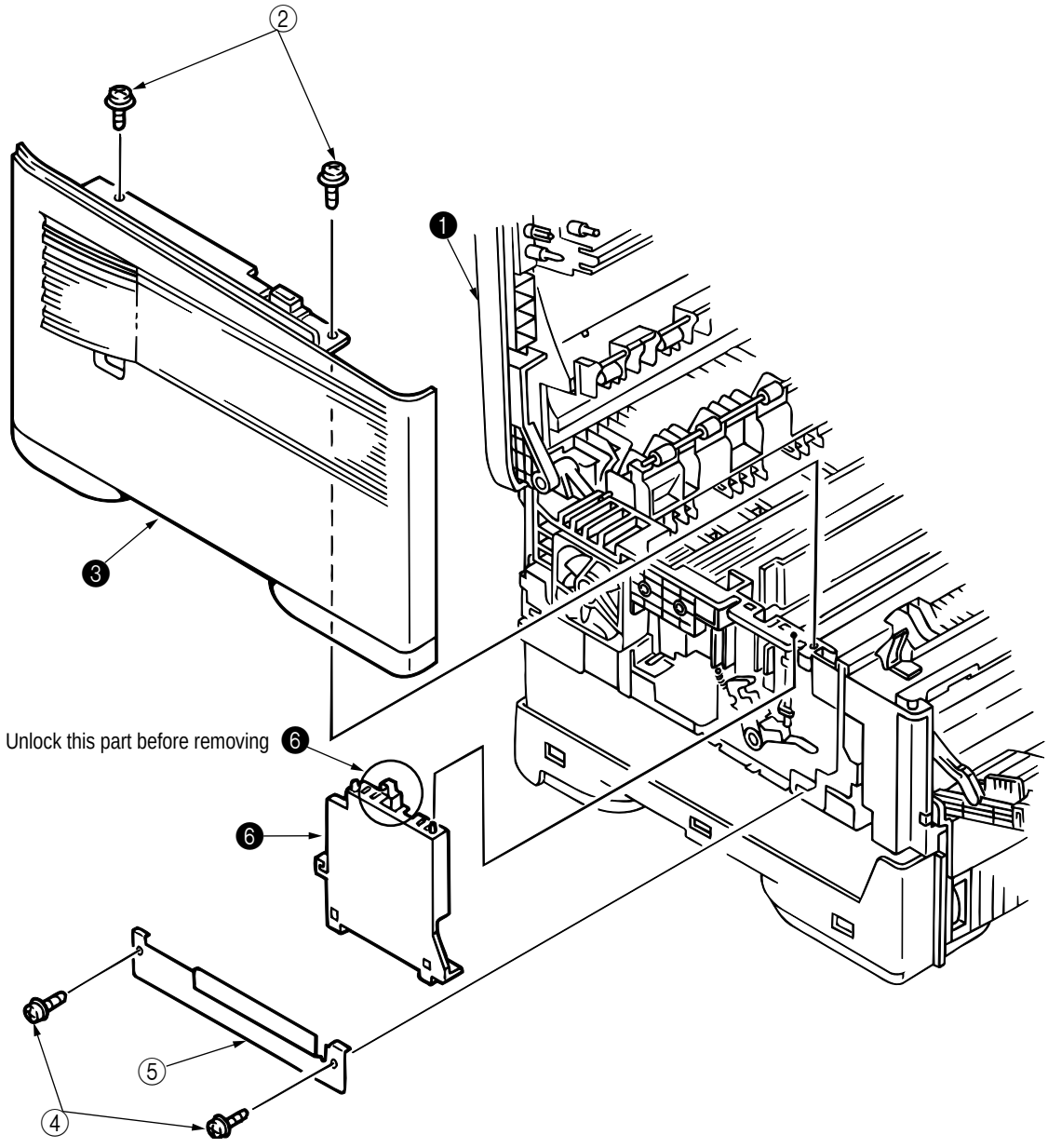


3.3.2 Contact Assy

(1) Open the stacker assy ❶ and unscrew 2 screw ② to remove the assy -side (L)❸.

(2) Unscrew 2 screws ④ and remove the plate (contact) ⑤ and contact Assy ❻.

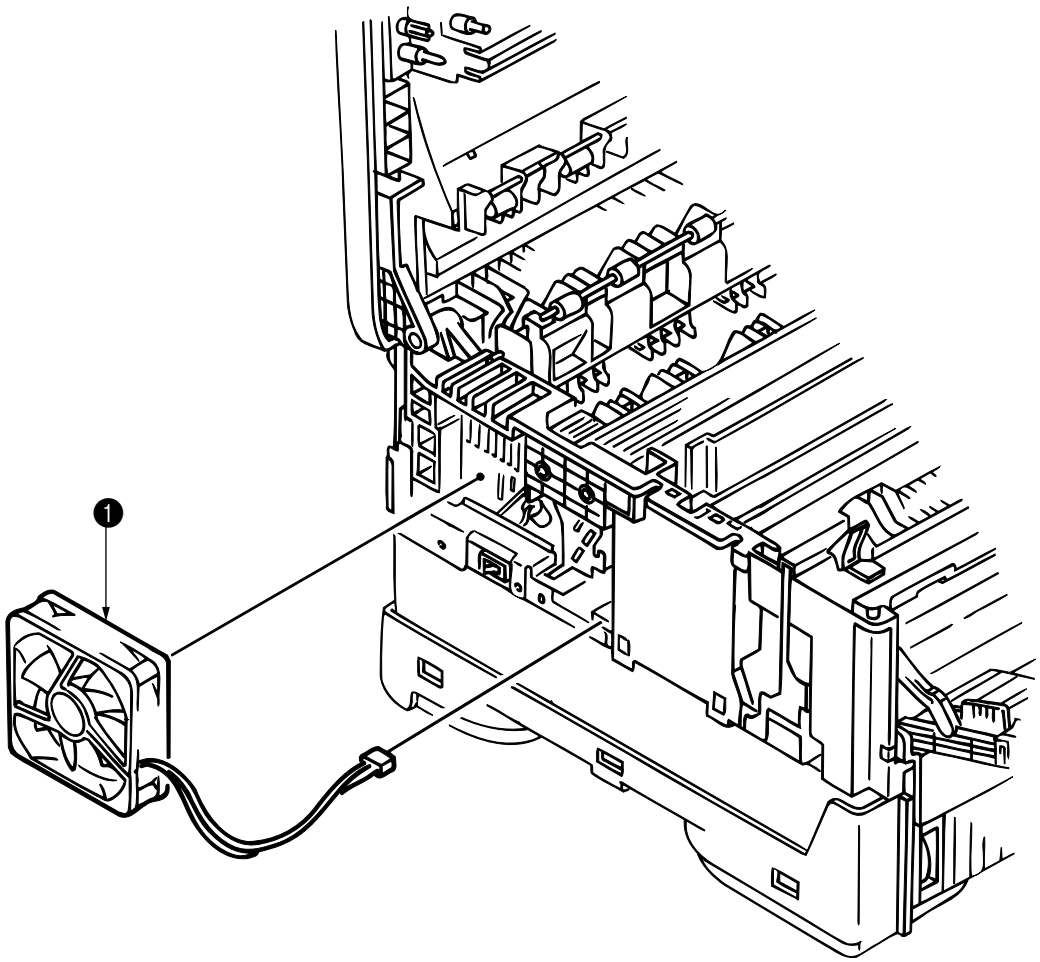
Note! Don't deform the electrode plates of the contact assy ❻.



3.3.3 DC Fan Motor

(1) Remove the cover assy-side (L). [See 3.3.2 (1)]

(2) Remove the DC fan motor ❶ by pulling out the connector of DC fan motor ❶.

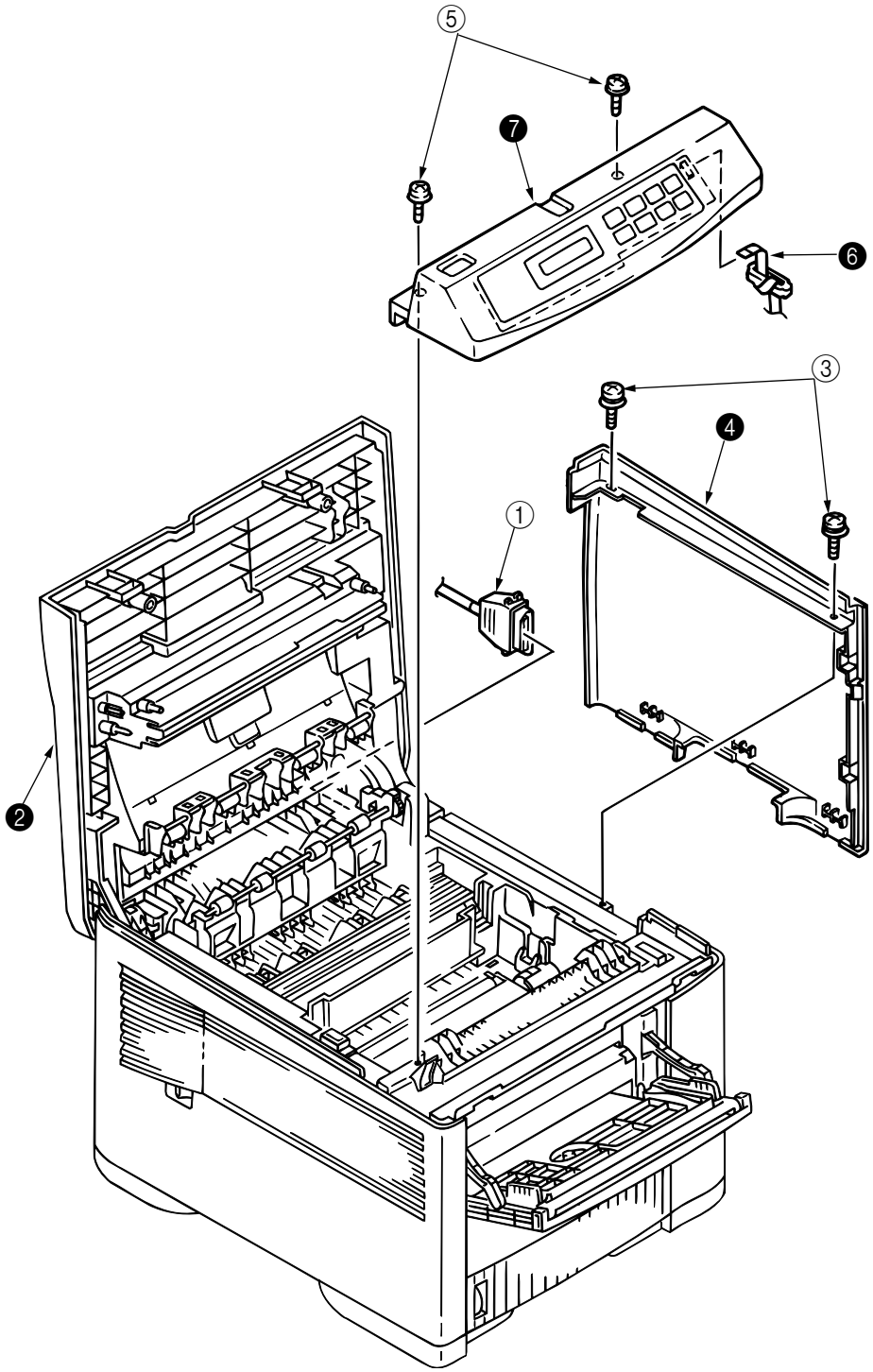


3.3.4 OP Panel Assy

(1) Disconnect the Interface cable ①.

(2) Open the stacker assy ❷, unscrew 2 screws ③ and remove the cover side (I/F) ❹.

(3) Remove 2 screws ⑤ and flexible cable ❻ to remove the operator panel assy ❼.



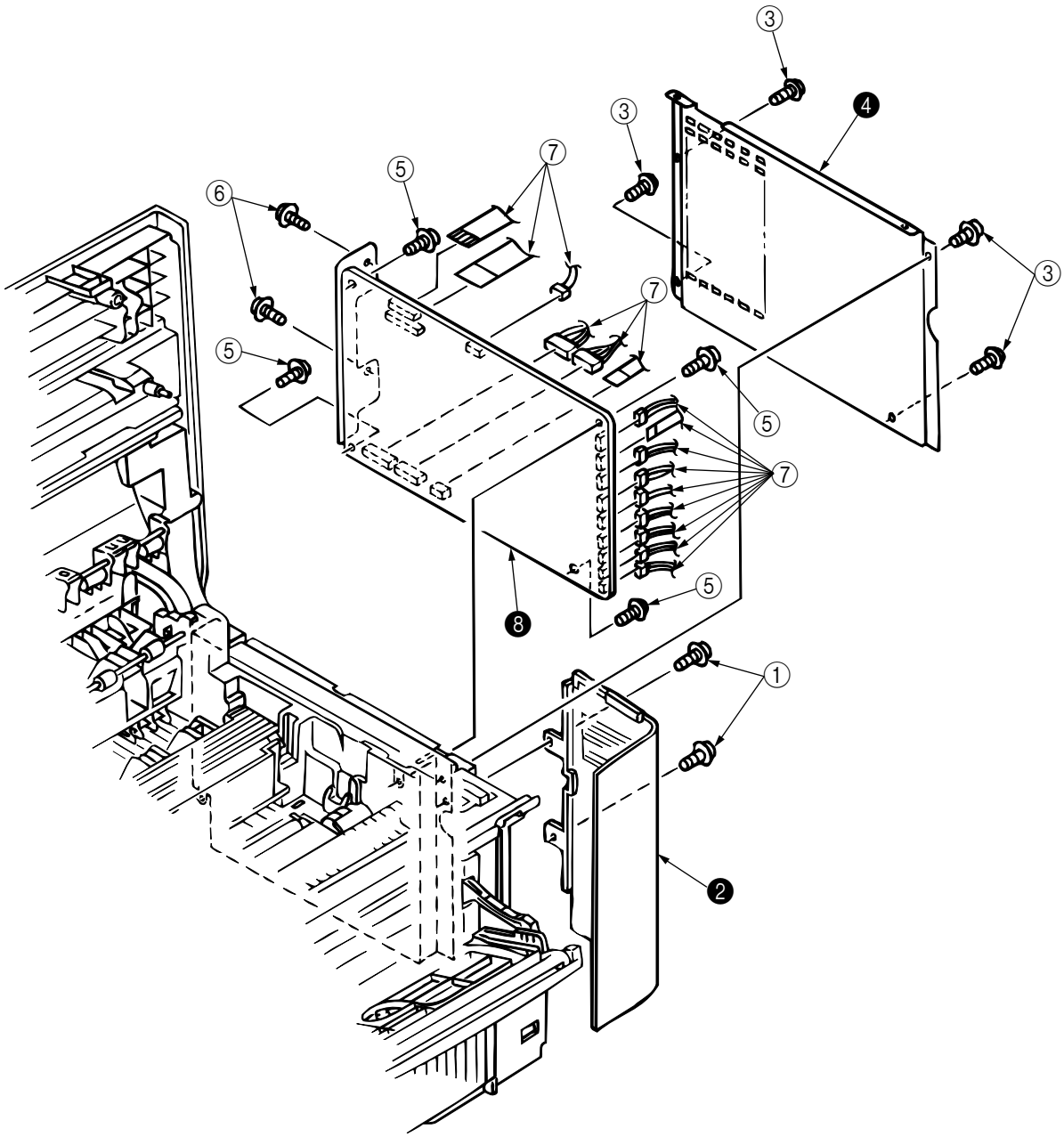
3.3.5 Board-FFF

(1) Remove the operator panel assy and cover side (I/F). [See 3.3.4]

(2) Unscrew 2 screws ① and remove the cover side (R) ❷.

(3) Unscrew 4 screws ③ and remove plate-shield ❹.

(4) Unscrew 4 screws ⑤ and 2 screws ⑥, unplug all the connectors ⑦ , and remove Board-FFF ❽.



3.3.6 Stacker Assy, Damper Arm, Cover Rear

(1) Remove the face-up stacker assy. [See 3.3.1]

(2) Remove the cover-side (L). [See 3.3.2 (1)]

(3) Remove the OP panel assy. [See 3.3.4]

(4) Remove the Board-FFF. [See 3.3.5]

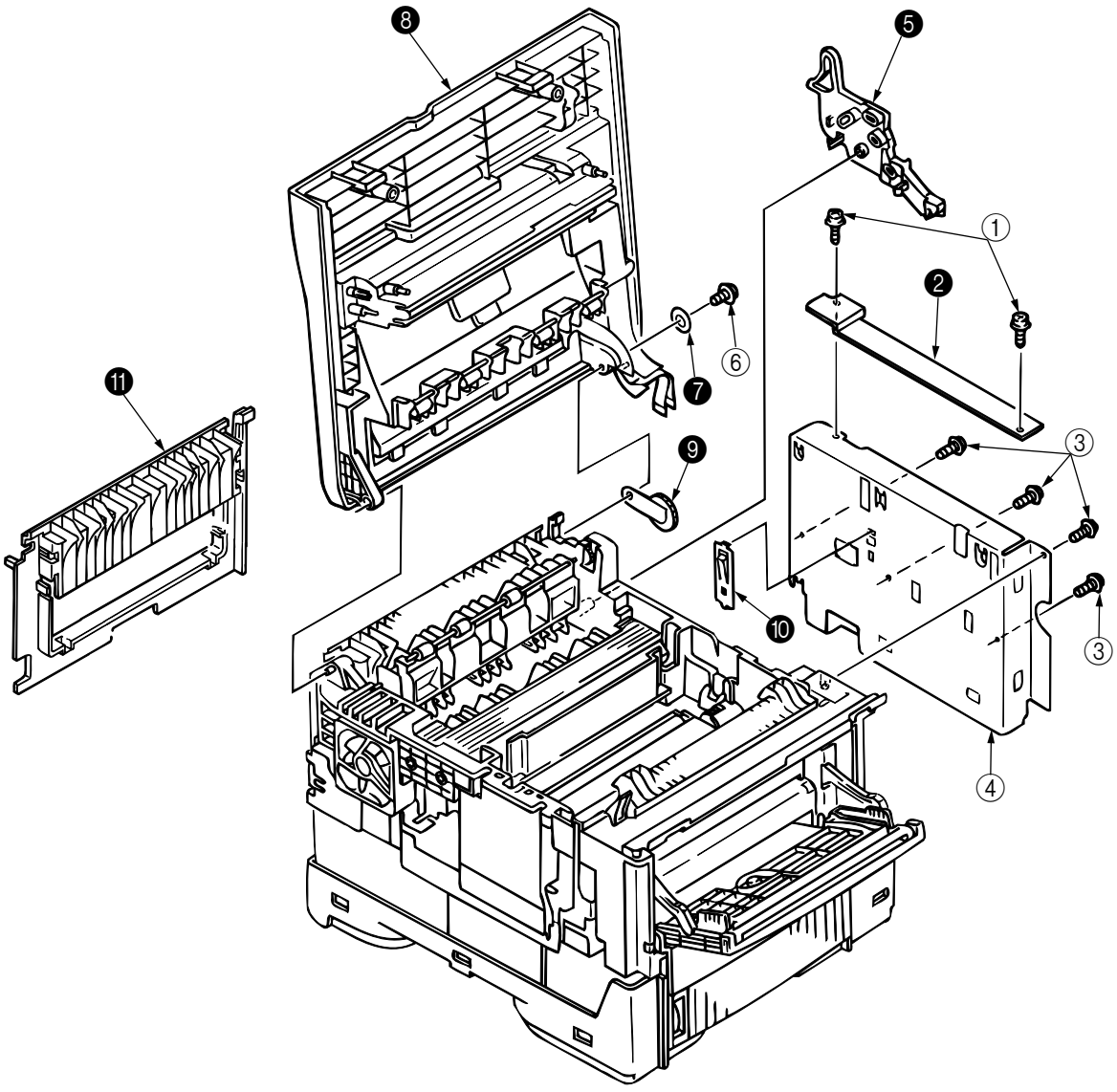
(5) Loosen 2 screws, unlock the both sides latches and remove the cover rear ⓫.

(6) Unscrew 2 screws ① and cover frame ❷.

(7) Unscrew 4 screws ③ and remove the plate assy-side (R) ④.

(8) Remove the lever back up release ❺ and unlock the engagement of the projection on the right side of gear at the right side of stacker cover.

(9) Remove a screw ⑥ and washer ❼, and then remove the stacker assy ❽.
(At this time, the damper arm ❾ can also be detached simultaneously.)



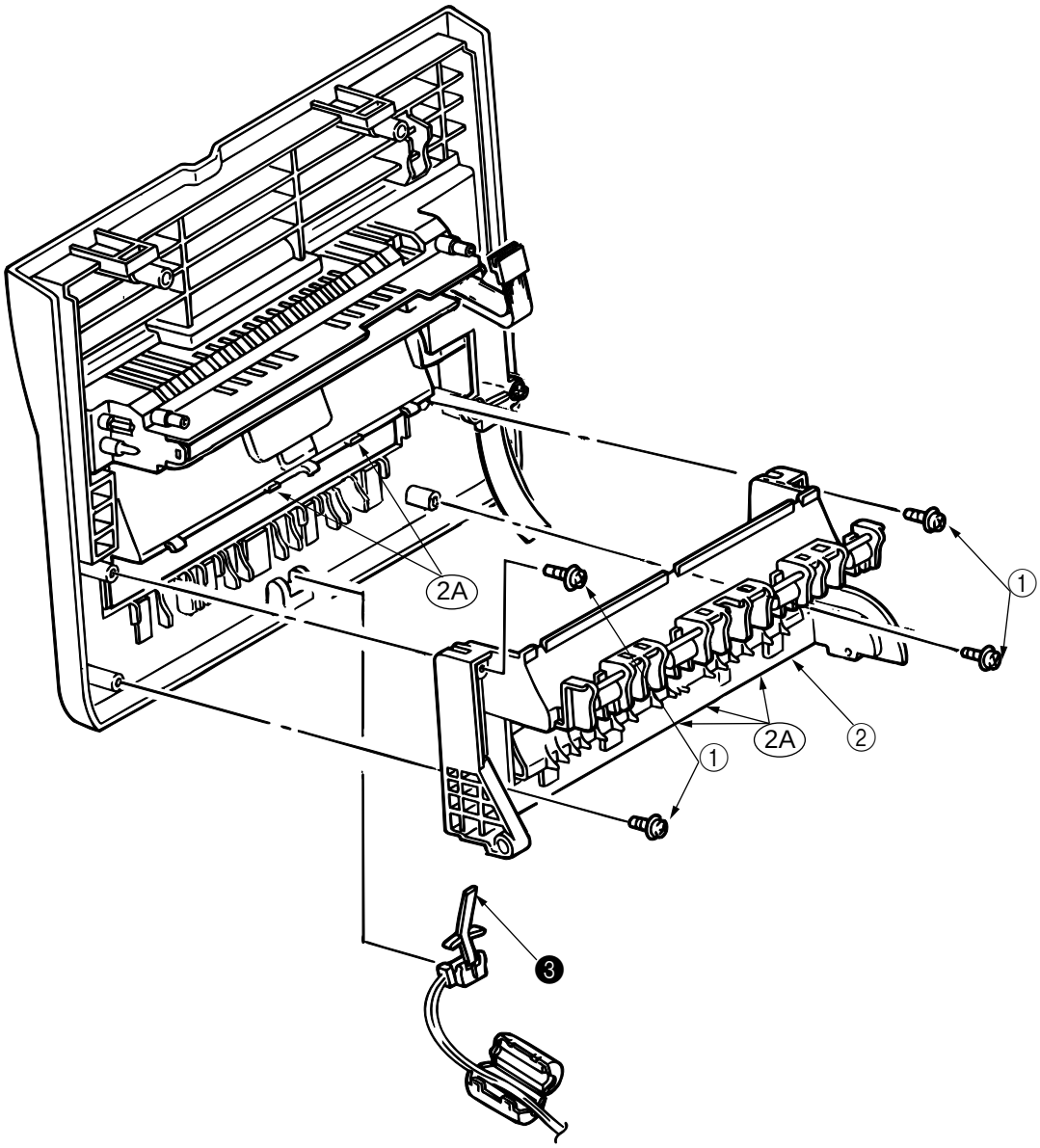
3.3.7 Sensor Stacker Full

(1) Turn the AC power switch off. Unplug the AC power cord from the outlet.

(2) Remove the Stacker assy. [See 3.3.6]

(3) Remove four screws ①. Remove stacker mount ② by releasing the tabs at position (2A).

(4) Remove Sensor stacker full ❸ by releasing speading the plastic tabs on each side of sensor Assy ❸ and lifting switch from cover.

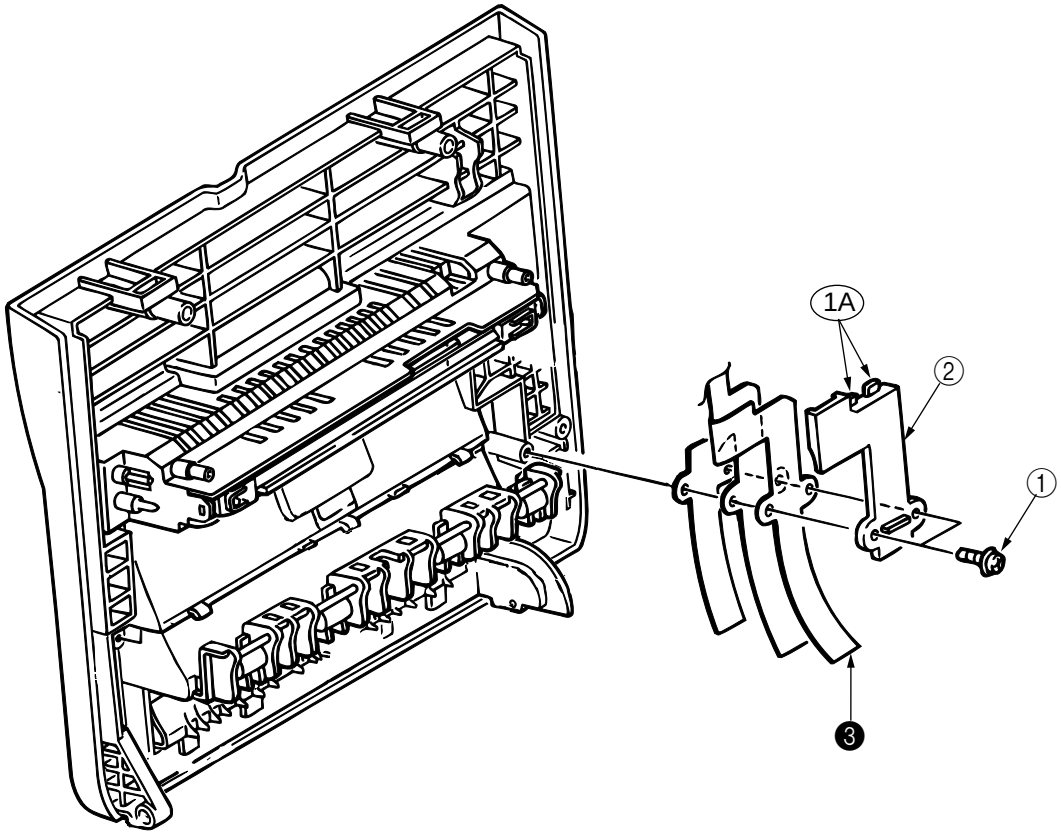


3.3.8 Cable cover (guide film)

(1) Turn the AC power switch off. Unplug the AC power cord from the outlet.

(2) Remove the stacker Assy. [See 3.3.6]

(3) Unscrew 2 screws ① release tabs at portion (1A) . Remove cable cover ②, guide film ❸.

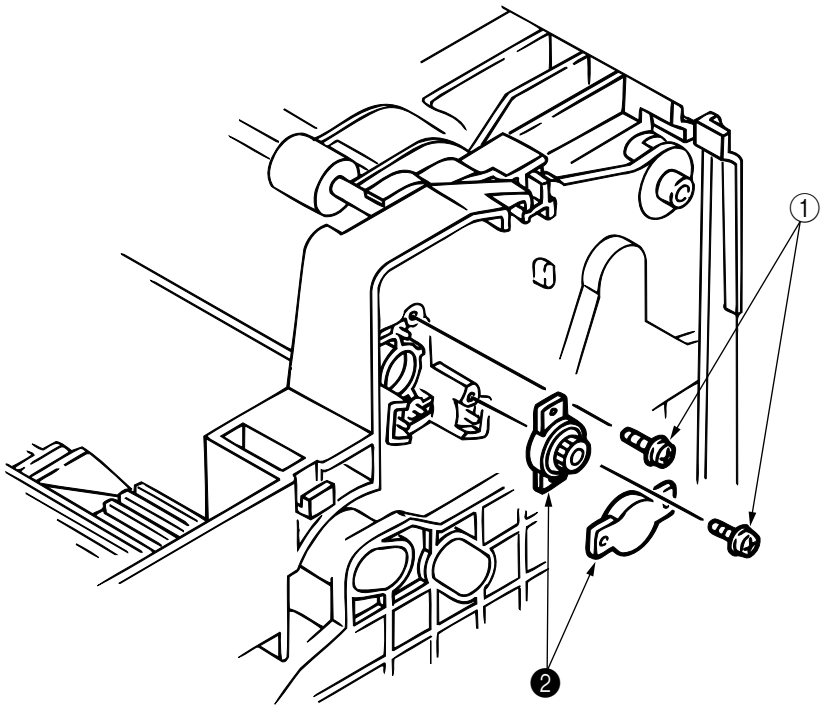


Note : Use care when replacing cable cover. Do not pitch, crimp, or cut cables or protective sheet.

3.3.9 Damper

(1) Remove the damper arm. [See 3.3.6]

(2) Unscrew 2 screws ① and remove the two damper ❷.



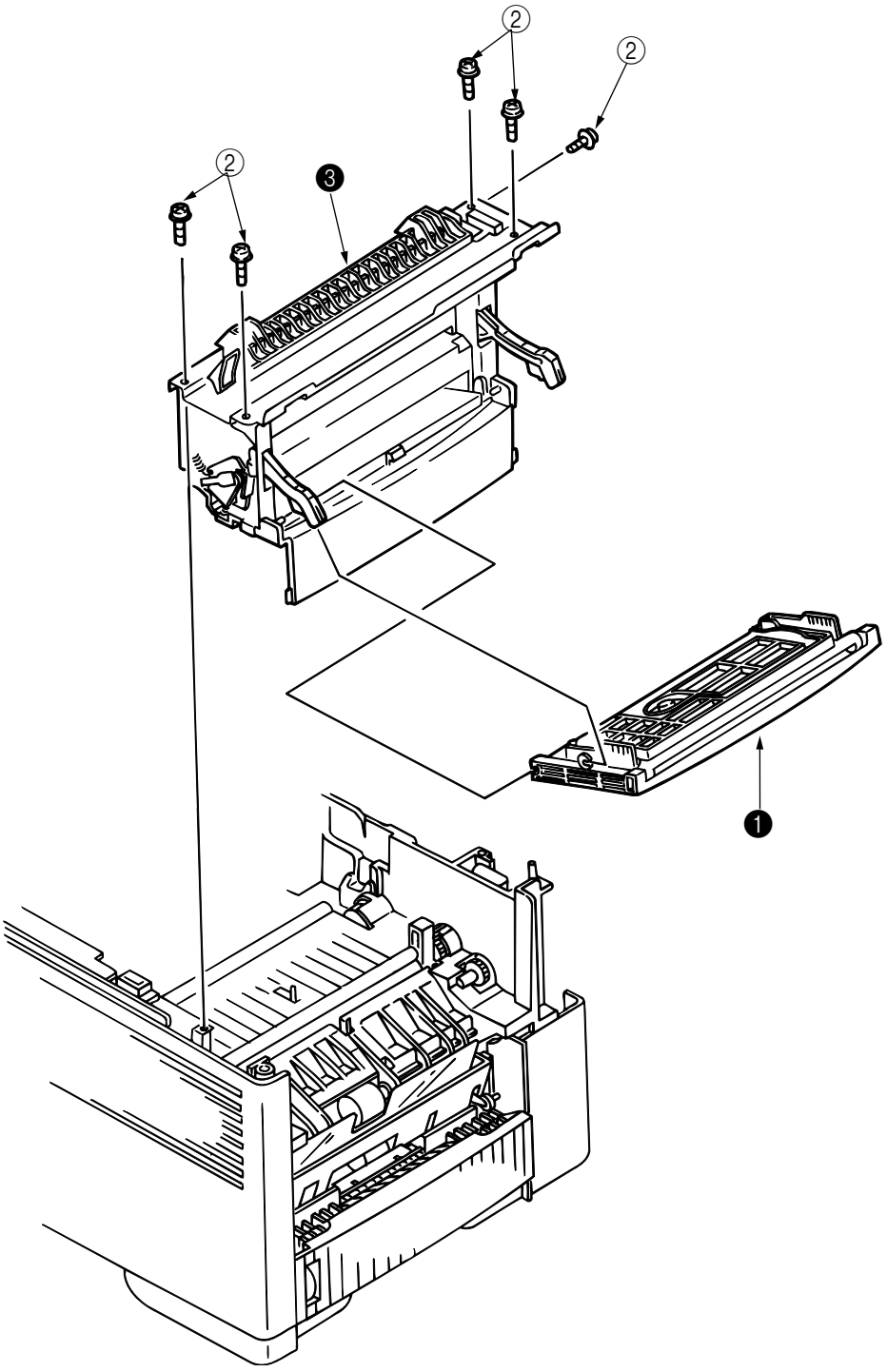
3.3.10 Feeder Unit-Front

(1) Open the manual feed assy ❶ and release both right and left parts by pulling out the engagements on the lower part.

(2) Stand the manual feed assy ❶ on end and unhook the engagements with both right and left manual feed hopper stays.

(3) Remove the OP panel assy. [See 3.3.4]

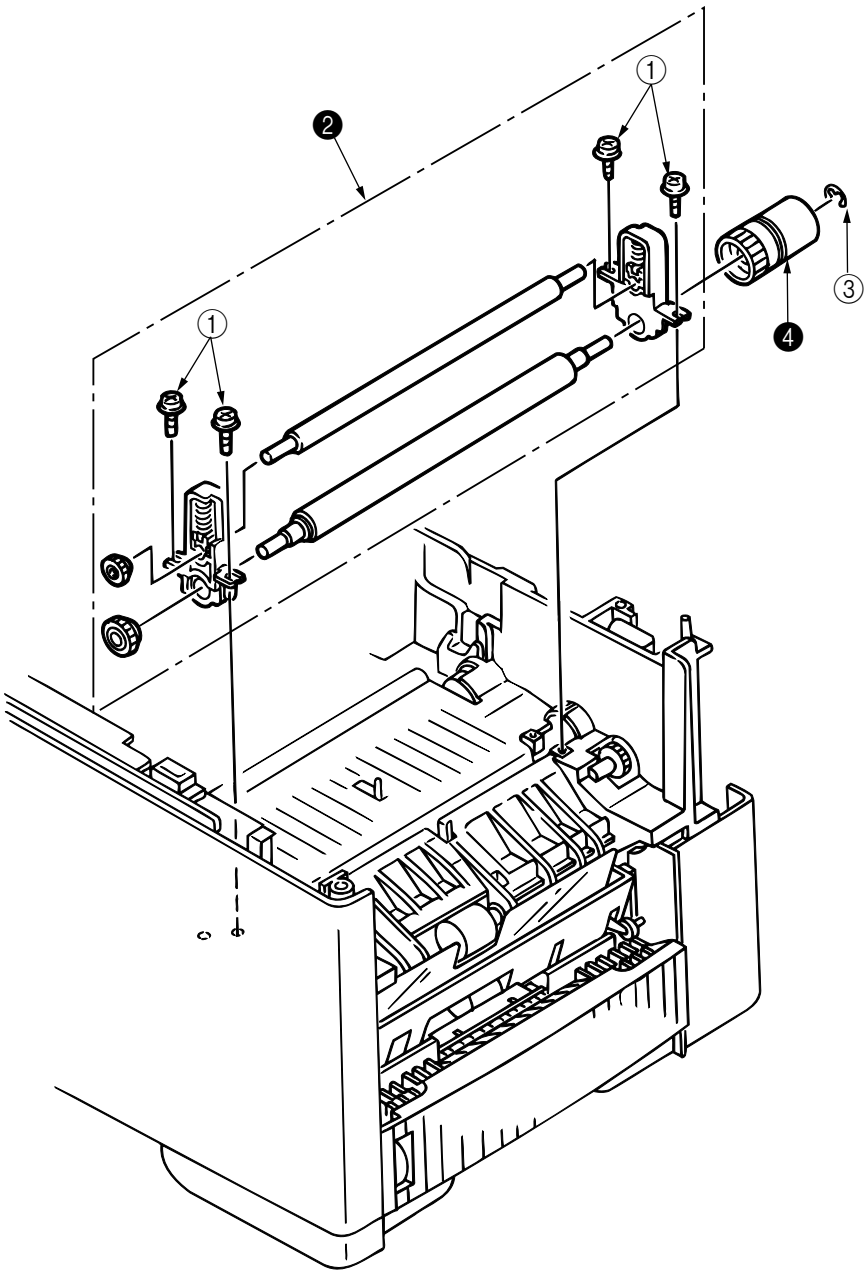
(4) Unscrew 5 screws ② and remove the feeder unit-front ❸.



3.3.11 Roller Assy-Regist

(1) Remove the feeder unit-front. [See 3.3.10]

(2) Remove an E-ring ③, gear assy-clutch ❹, and four screws ① in this order, and lifting out the roller assy-regist ❷.



3.3.12 Motor -Main

(1) Remove the stacker assy. [See 3.3.6]

(2) Remove the feeder unit-front. [See 3.3.10]
(At this point, the manual feed assy has not to be removed.)

(3) Remove the DC fan motor. [See 3.3.3]

(4) Remove the contact assy. [See 3.3.2]

(5) Remove the plate-FG (F) ①.

(6) Remove the TR gear ❷ and roller transfer ❸.(Use Holder-TR Eject ⑯ for the removal.)

(7) Unscrew 7 screws ④ and remove the main frame ❺.

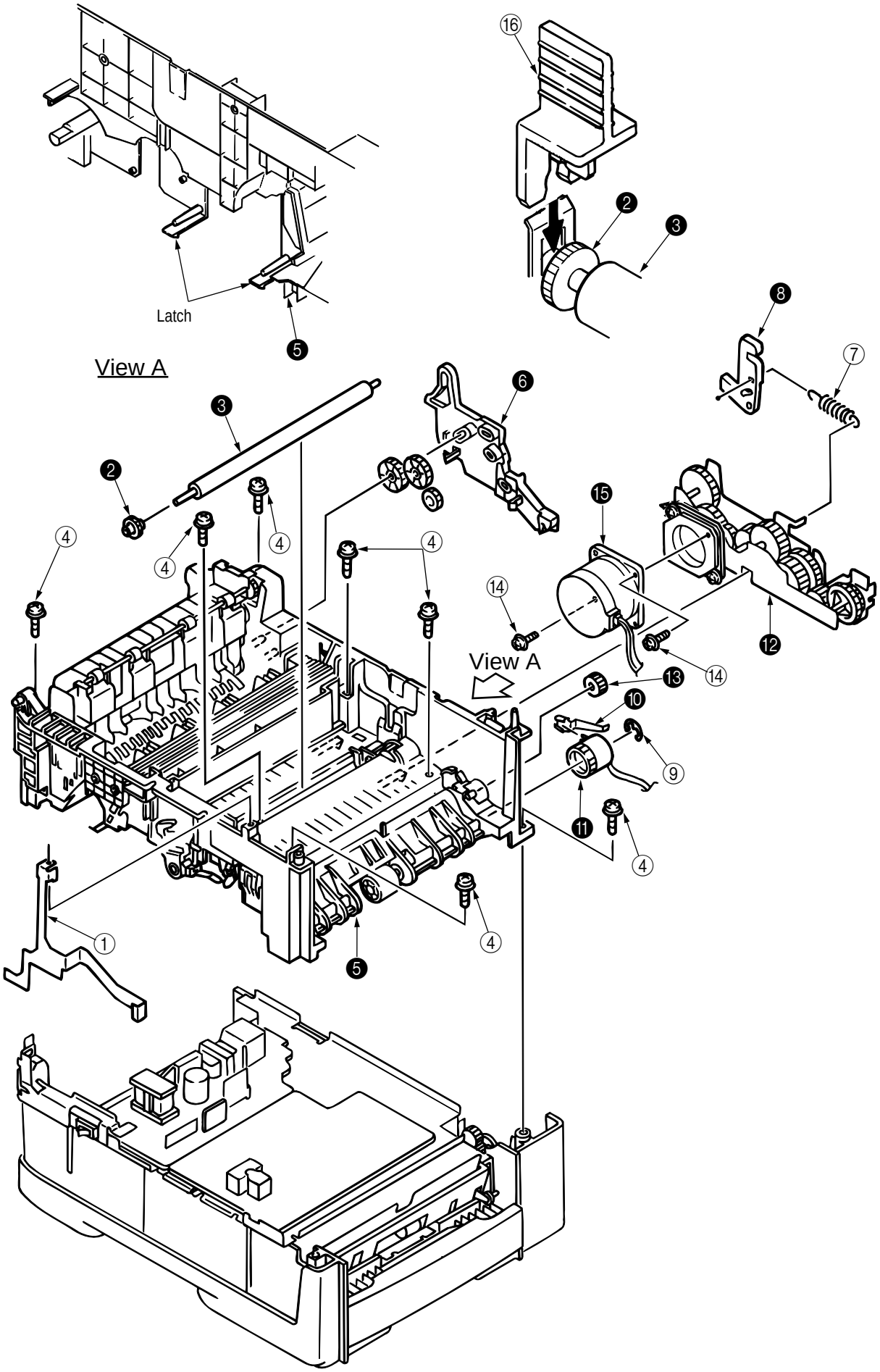
(8) Unlock latches at two points of the lever back up release ❻ and pull out it in right direction.

(9) Unhook the EP lock spring ⑦ and remove the EP lock lever ❽.

(10) Take off the E ring ⑨ and remove the plate-FG (1st) ⑩ and gear assy-clutch ⓫.

(11) Unlock 2 latches to remove the motor assy-main ⓬ and idle gear ⓭.

(12) Unscrew 2 screws ⑭ and remove the motor -main ⓯ .

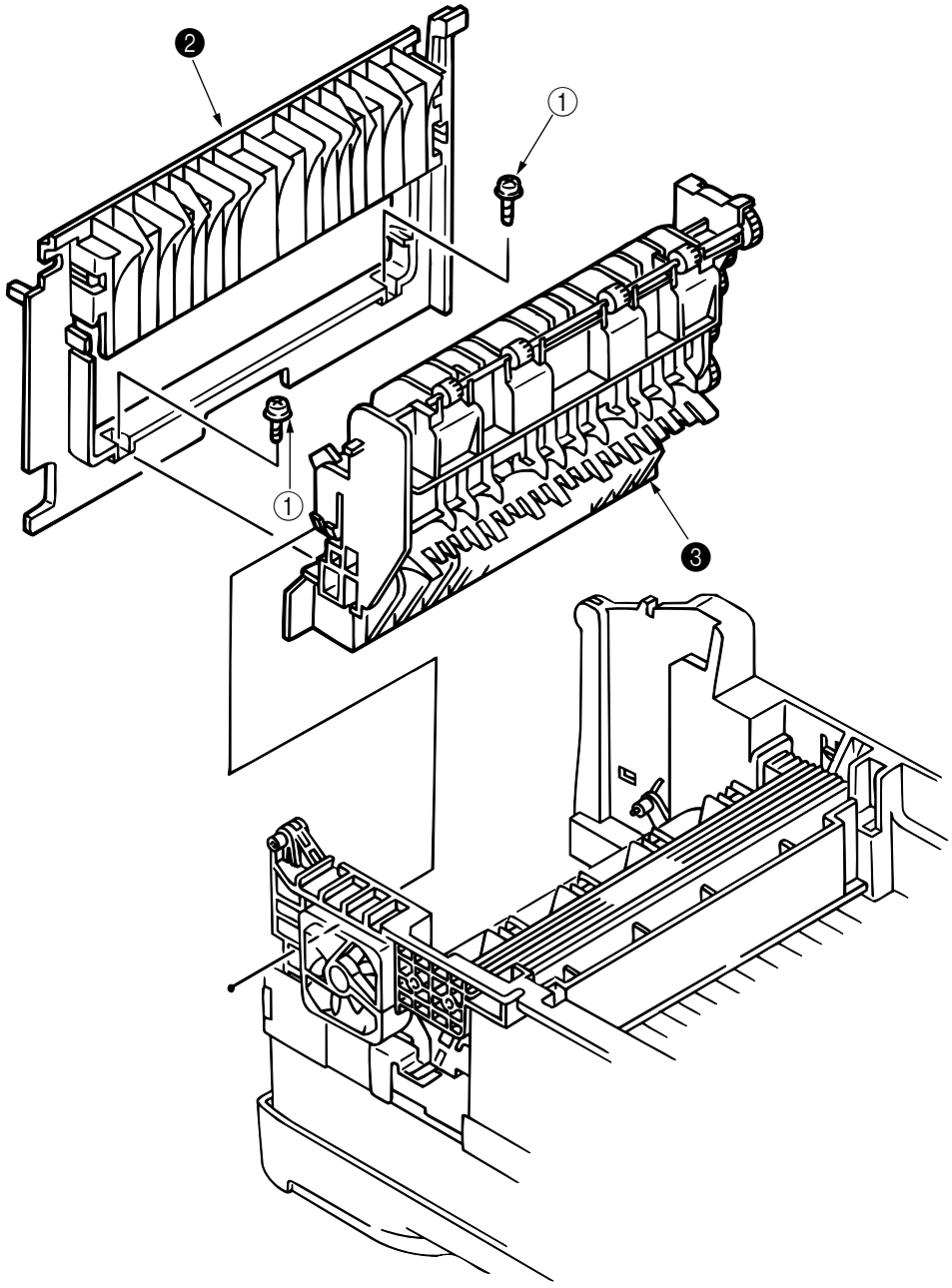

Latch
View A
View A

3.3.13 Guide Assy-Eject

(1) Remove the lever back up release. [See 3.3.12(8)]
(But the roller transfer/feeder unit front/plate-FG have not be removed)

(2) Loosen 2 screws ①, unlock the both side's latches and remove the cover rear ❷. [See 3.3.6 (5)]

(3) Unlock the latches on both sides of the guide assy-eject ❸ and lifting it out.



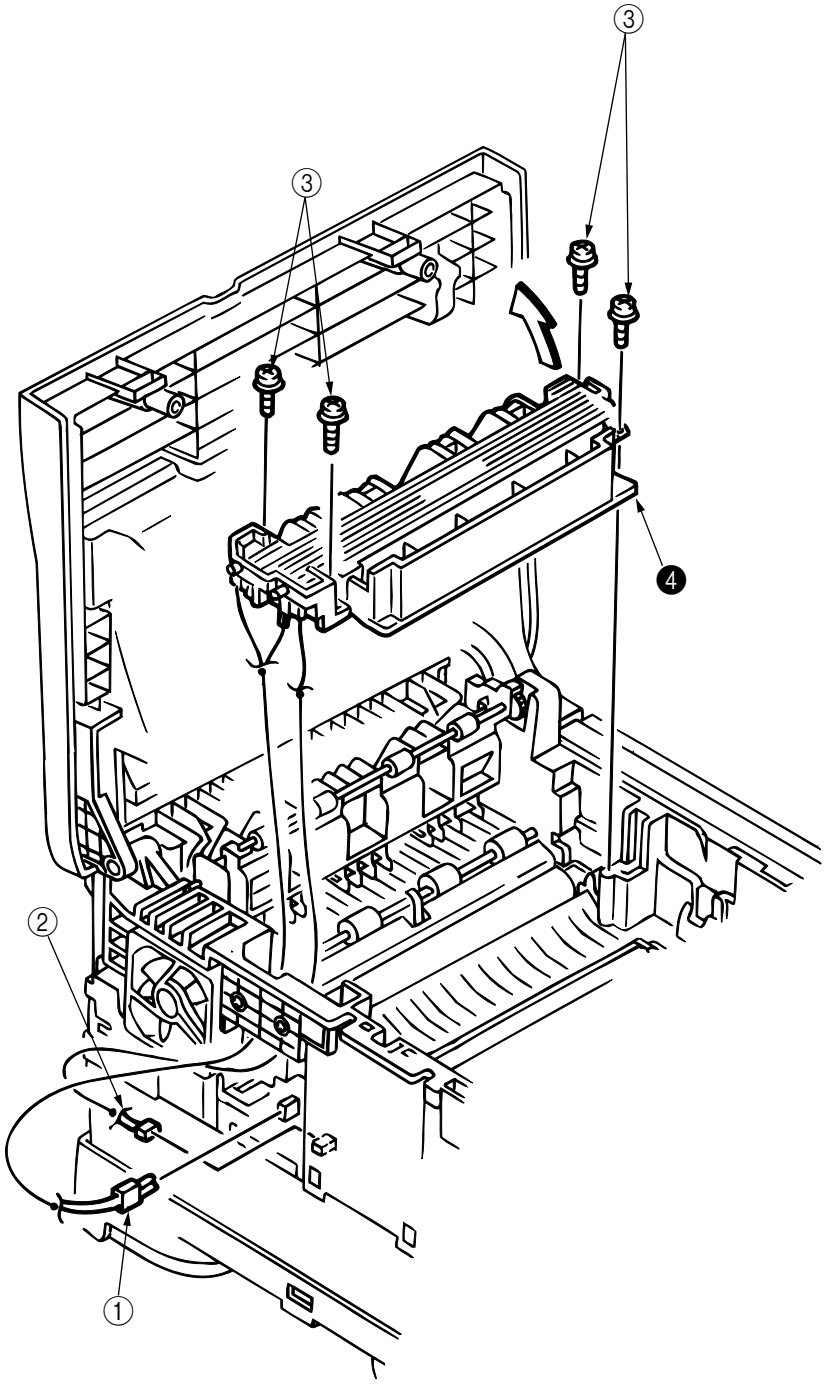
3.3.14 Heat Assy

(1) Remove the cover assy-side (L). [See 3.3.2 (1)]

(2) Unplug the connectors ①, ②.

(3) Unscrew 4 screws ③ and remove the heat assy ❹ in the direction of the arrow by lifting the right side first.

Note ! • As the heat assy ❹ becomes high temperature soon after the power is turned off, start the work after it cools off sufficiently.
• Carry out a reset of the counter after the replacement. (See Section 4.2)

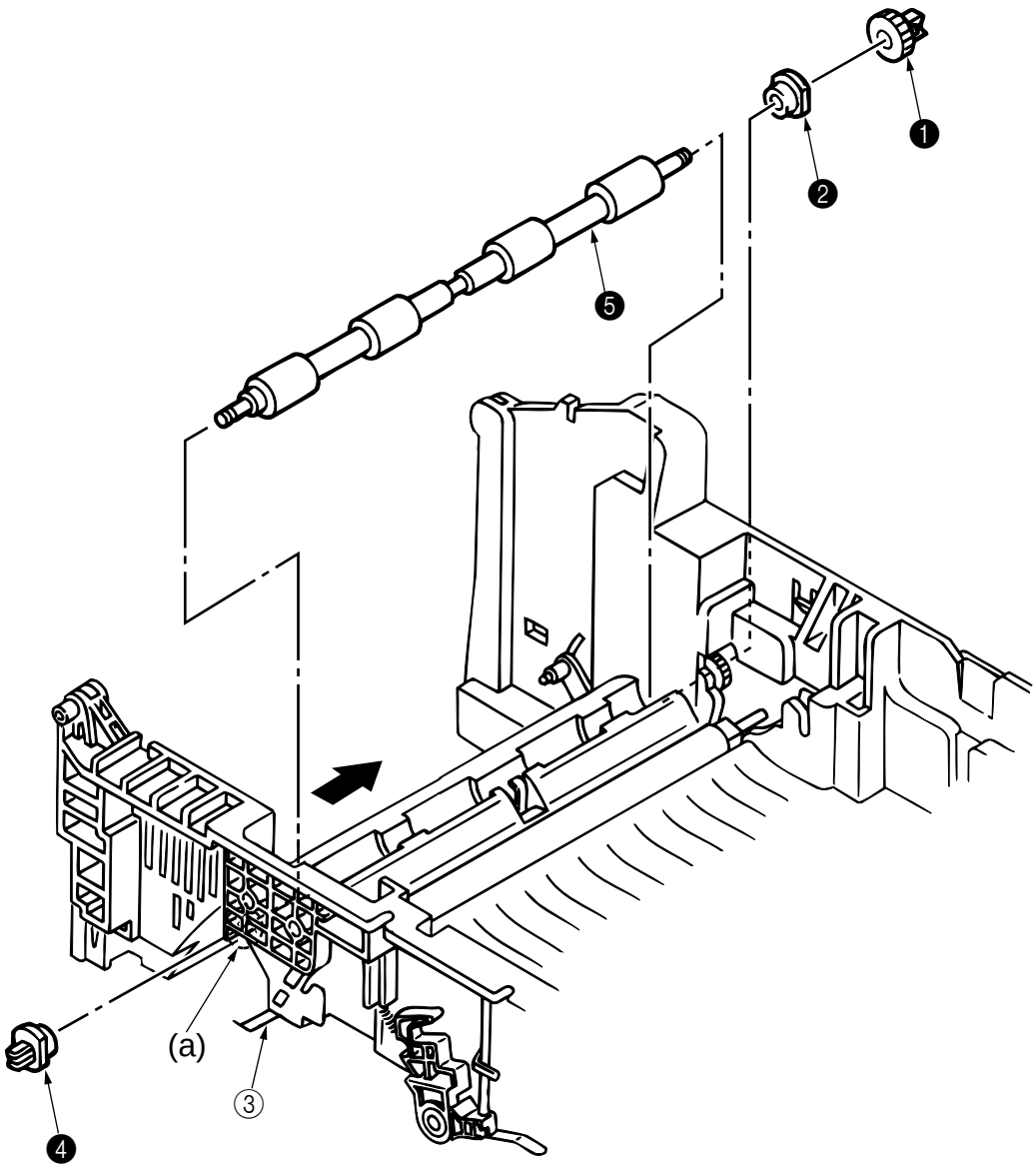


3.3.15 Roller feed (C)

(1) Remove the guide assy-eject. (See 3.3.13)
(But roller transfer/feeder unit-front/plate-FG(F) have not be removed)

(2) Remove the gear roller (C) ❶ and bush ❷, warp (a) part of the plate-FG (BK) ③. Take off the carrier bearing ❹ and remove the roller feed (c) ❺ in the direction of the arrow.

Note ! Be careful not to deform (a) part of the plate-FG (BK) ③.

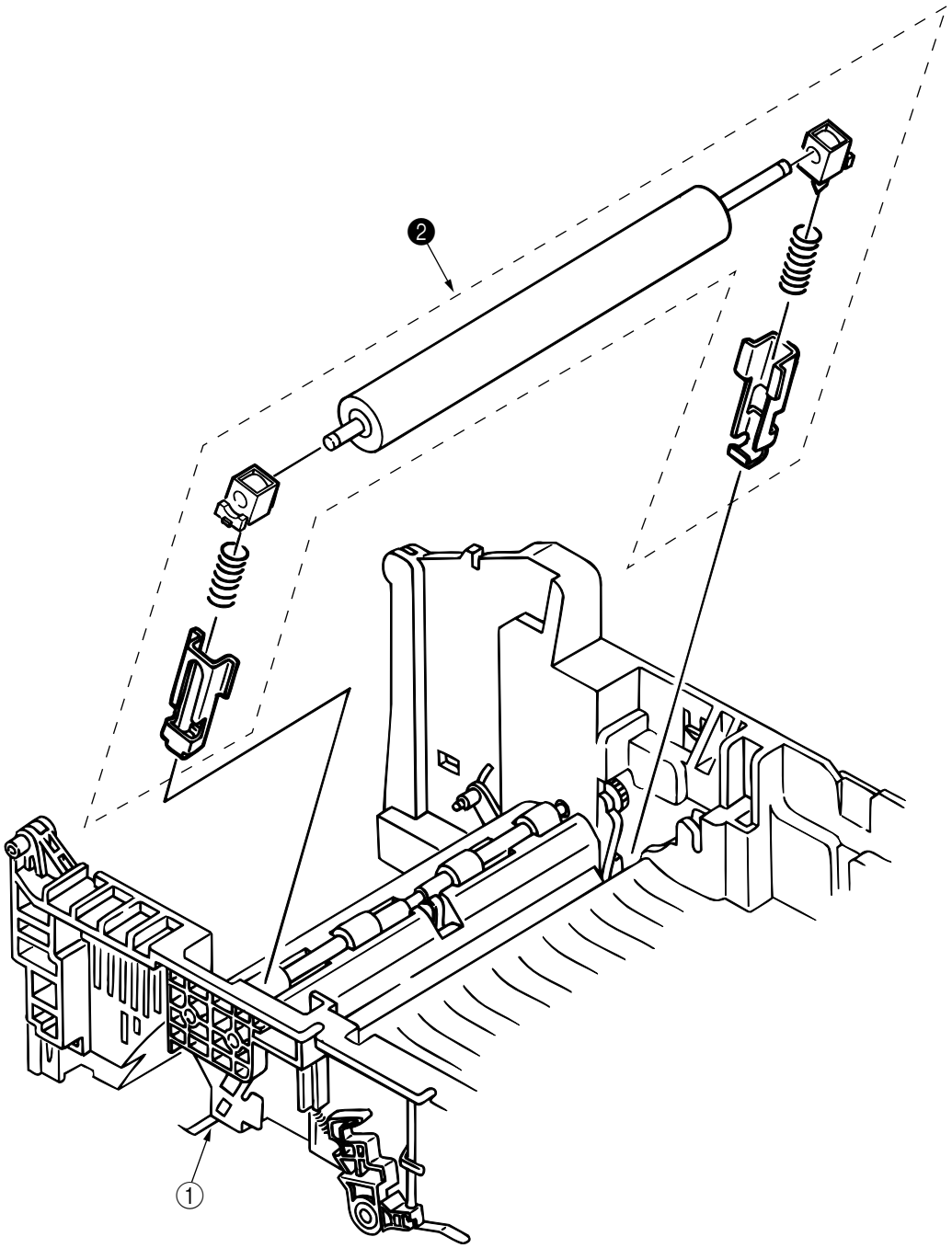


3.3.16 Roller Assy-BK

(1) Remove the heat Assy. [See 3.3.14]

(2) Remove the lever back up release. [See 3.3.12 (8)]

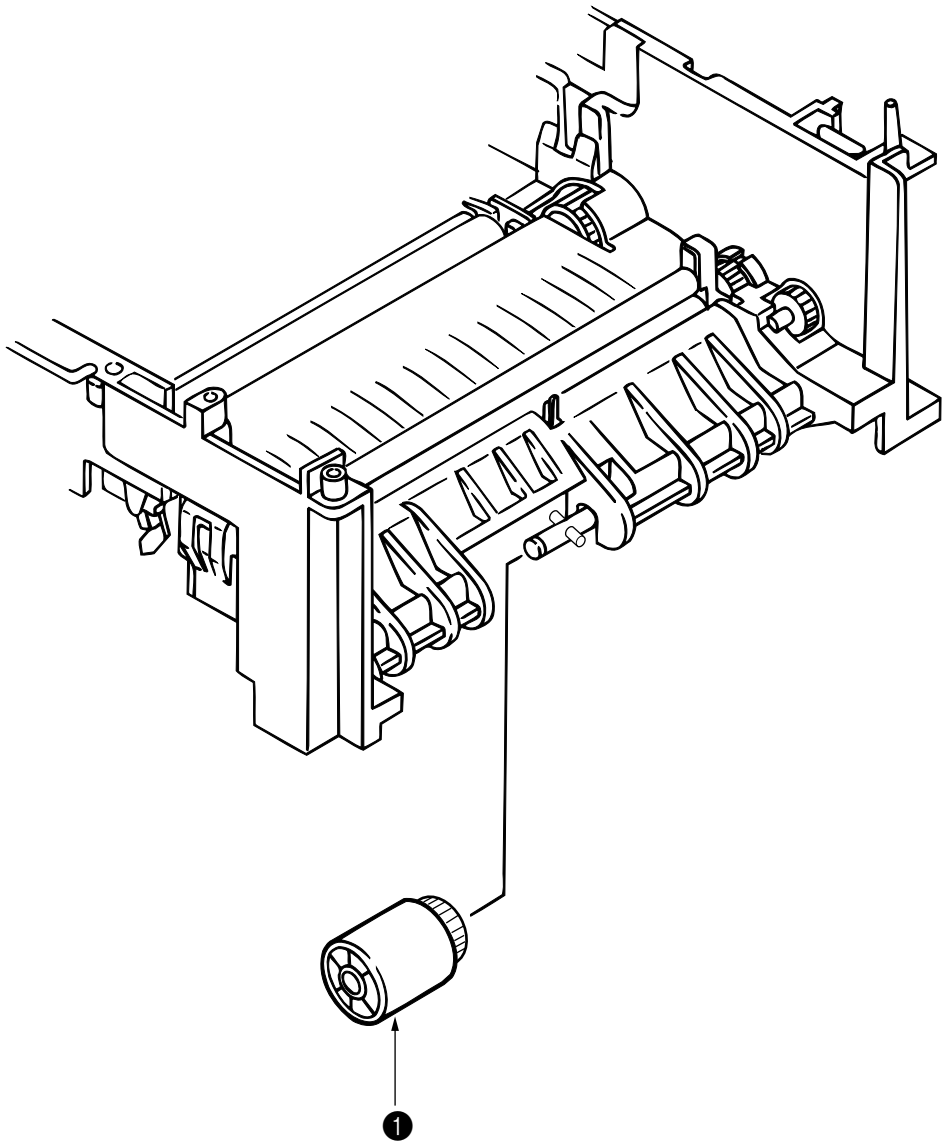
(3) Unlock the engagement with the plate-FG (BK) ① and lift out the roller heat assy ❷.



3.3.17 Roller Assy-Feed

(1) Remove the feeder unit -front. [See 3.3.10]

(2) Remove the roller assy-feed ❶ by unlocking a latch.



3.3.18 LED Head

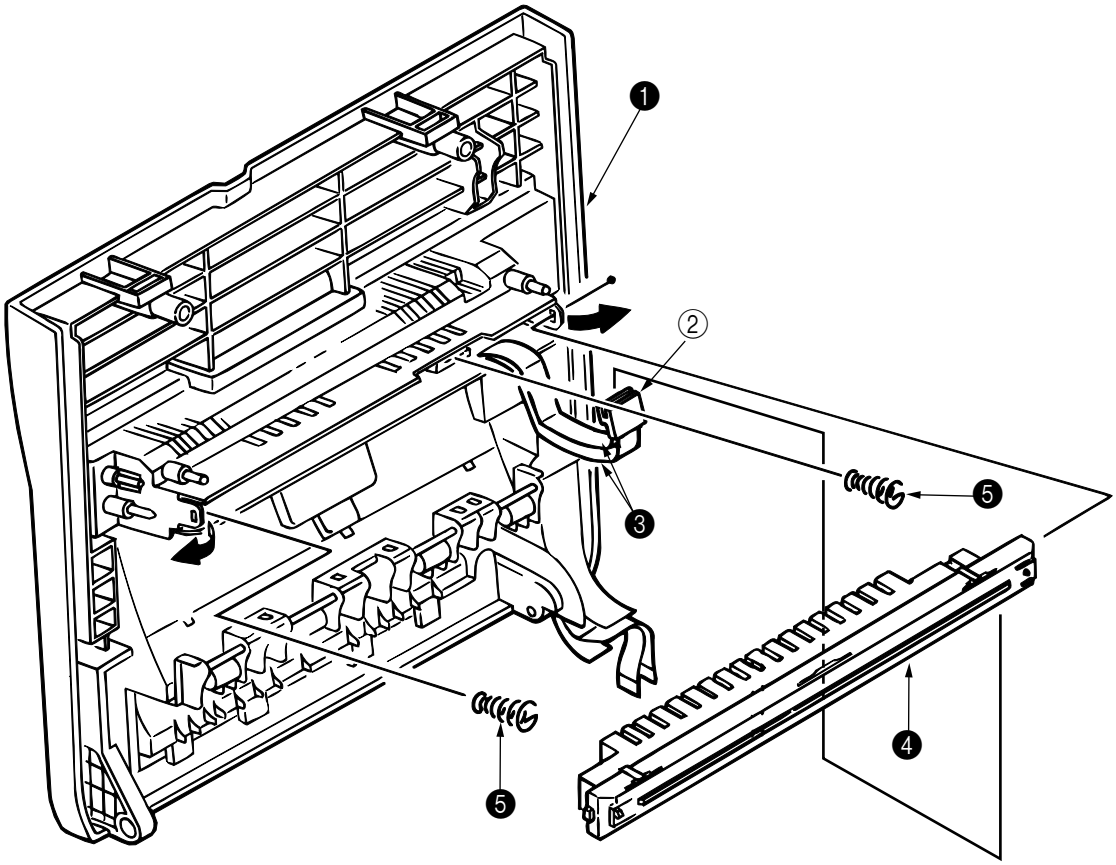
(1) Remove the stacker assy ❶. [See 3.3.6]

(2) Unplug the PC connector ② and 2 LED cables ❸ from the LED head ❹.

(3) Open the hooks of the cover stacker 1 in the direction of the arrow and remove the LED head ❹.

(4) Pull out the head spring ❺ from the post.

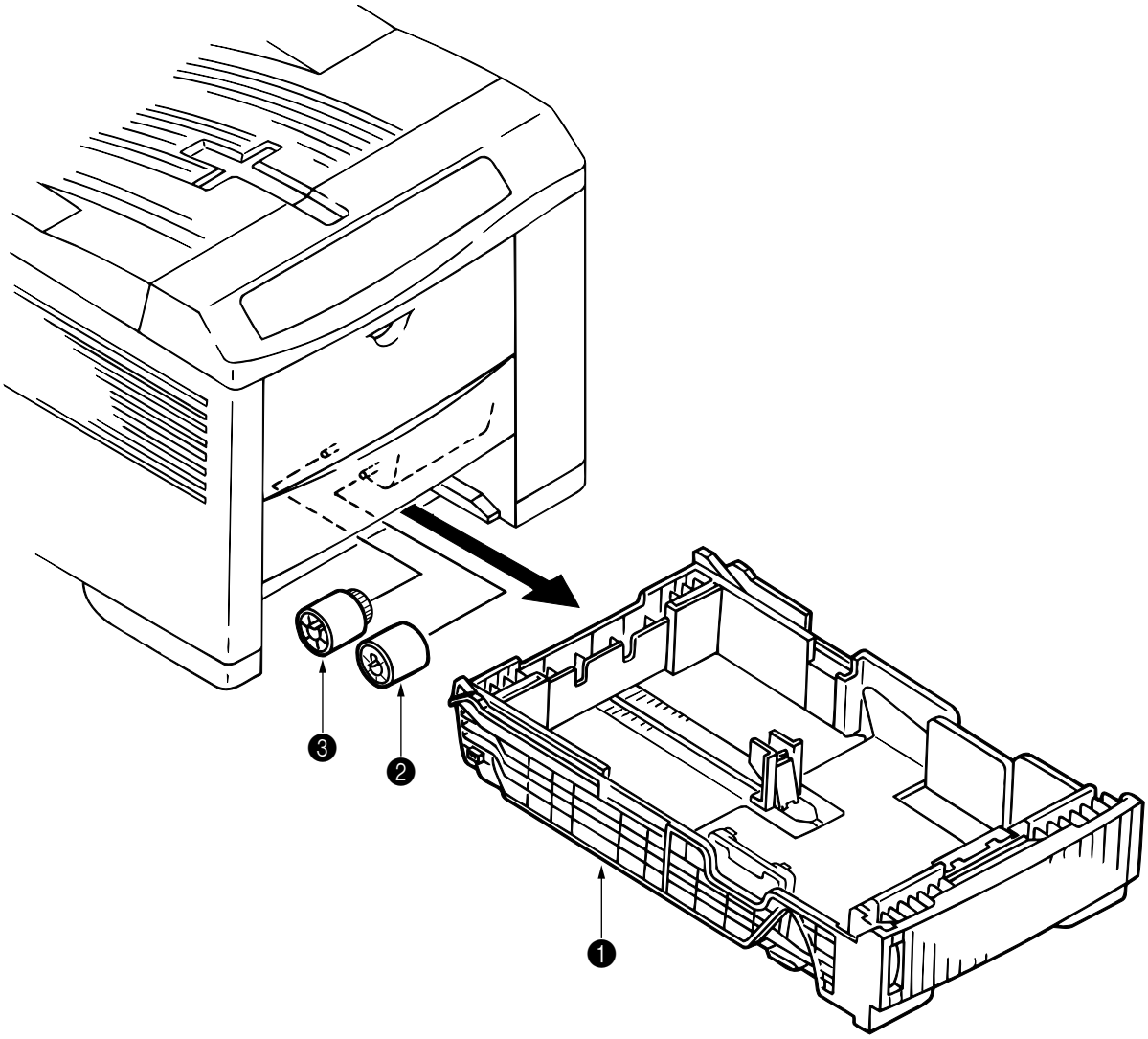
Note: Don't remove two LED cable ❸ from the PC connector ②.



3.3.19 Paper cassette, ROLLER Ass-Feed, ROLLER-Assy-Hoppibg

(1) Pull out the case assy -cassette ❶ from the printer.

(2) Remove the ROLLER Ass-Feed ❷ and remove the ROLLER-Assy-Hopping ❸.

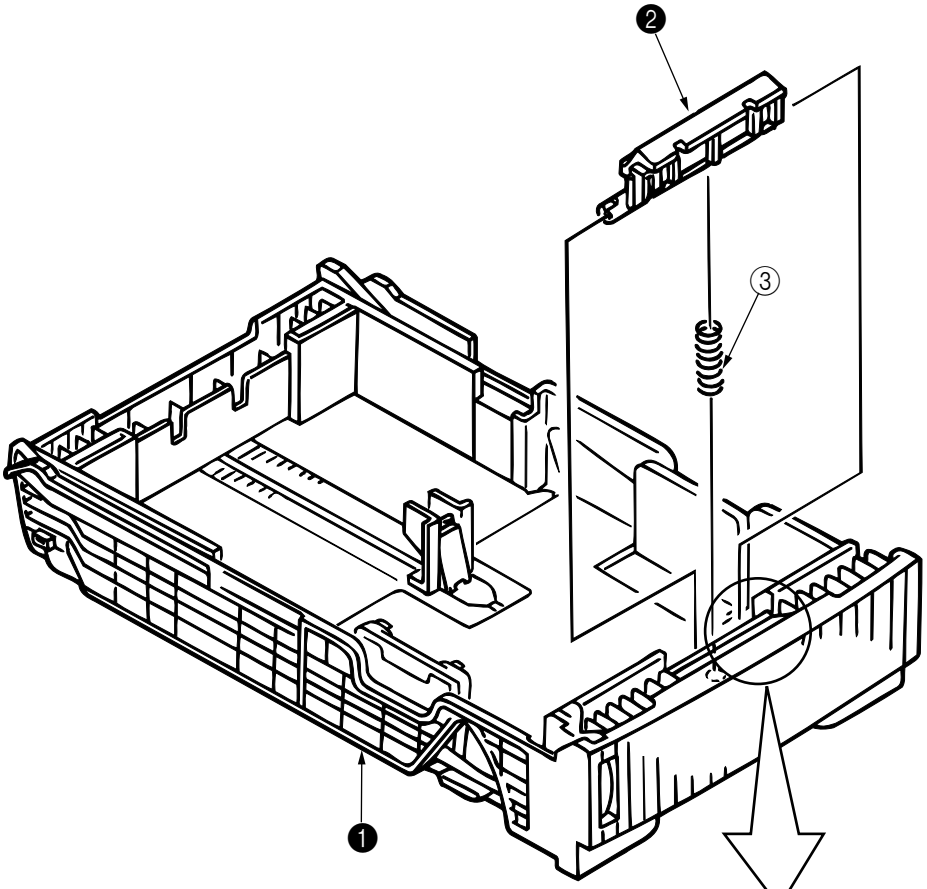


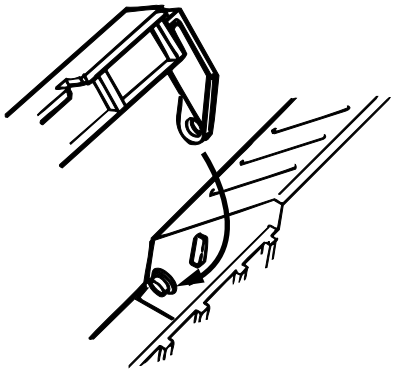
3.3.20 Frame Assy-Separation

(1) Turn the AC power switch off. Unplug the AC power cord from the outlet.

(2) Pull out the case Assy-Cassette ❶ from the printer.[See 3.3.19(1)]

(3) Release two locks and remove frame assy-separation ❷. (At this time, coil spring ③ is also remove. Be careful not to lose this spring.)





Insert ❶ so as to pass the both arms of ❶ behind two latches inside the alcove of ❷ unit.

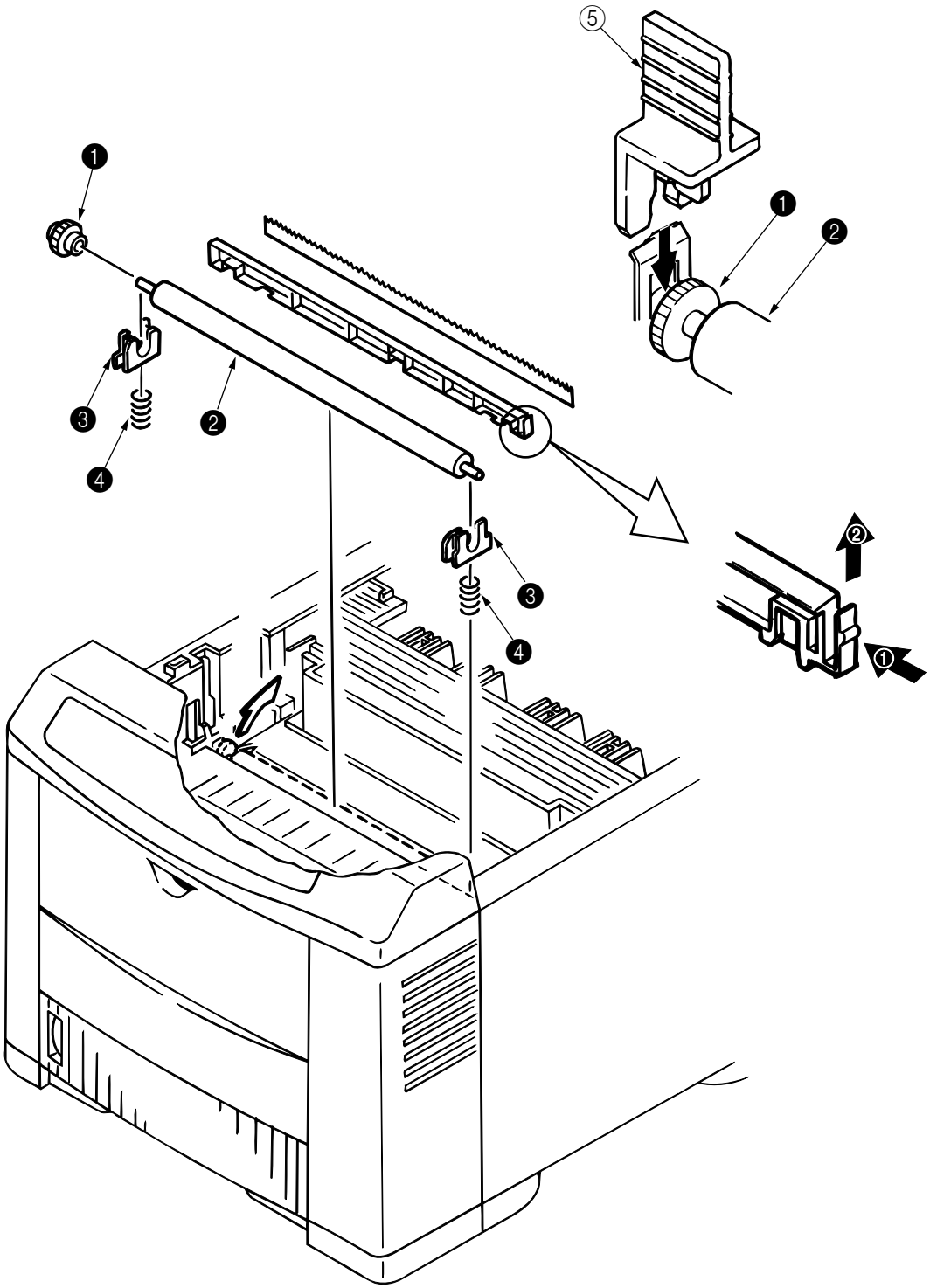
3.3.21 Transfer Roller/TR Gear/TR Bearing

(1) Open the stacker cover .

(2) Unlock the lock by lifting the TR gear ❶ to remove the TR gear ❶ and roller transfer ❷. (Use the Holder-TR Eject ⑤ for the removal.)

Note ! Don't place the removed roller transfer directly on the desk and so on. When placing it, lay a paper and the like under it.

(3) Remove right and left, 2 bearings ❸ from the frame-main by sliding them inside while pushing them. At this time, 2 transfer springs R ❹ would be detached simultaneously.



3.3.22 EP lock shaft

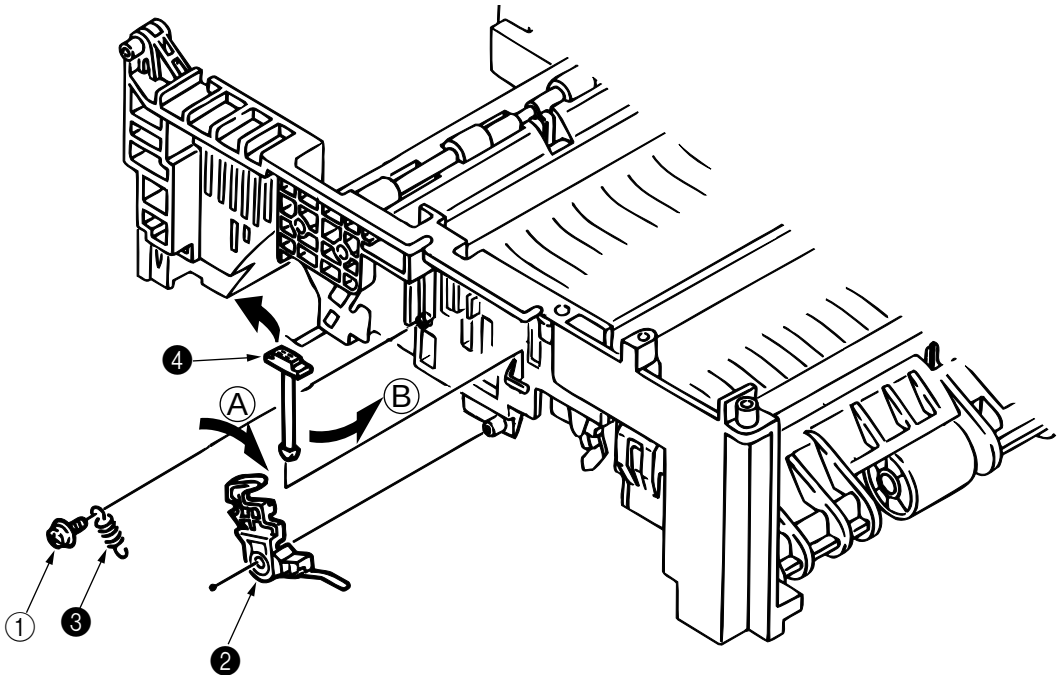
(1) Turn the AC power switch off. Unplug the AC power cord from the outlet.

(2) Remove Frame-Main [See.3.3.12(7)]

(3) Remove screw ①. Turn EP lock lever (L) Assy ❷ in the direction of arrow Ⓐ .

(4) Remove spring ❸.

(5) Drop EP lock shaft ❹ down and turn in the direction of arrows Ⓑ and remove it.

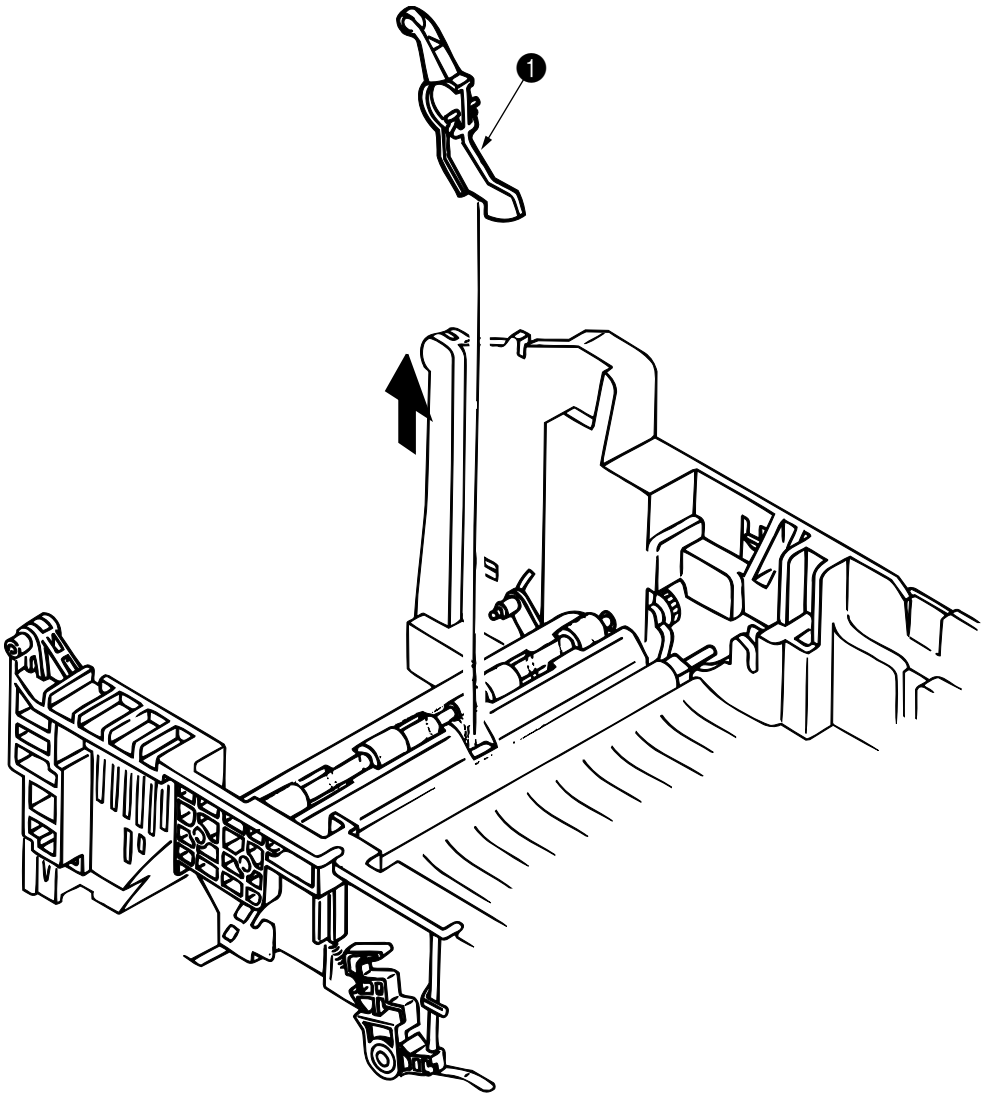


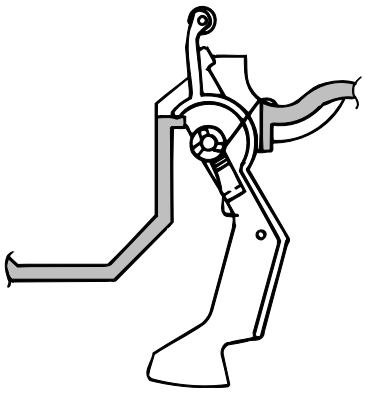
3.3.23 LEVER Assy- Out Sensor

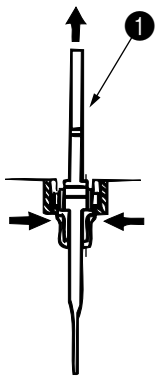
(1) Turn the AC power switch off. Unplug the AC power cord from the outlet.

(2) Remove the frame main [See 3.3.12(7)]

(3) Press the clamp part of LEVER Assy.- Out Sensor ❶. Remove the LEVER Assy.-Out Sensor ❶ by pushing it upward from the lower side.





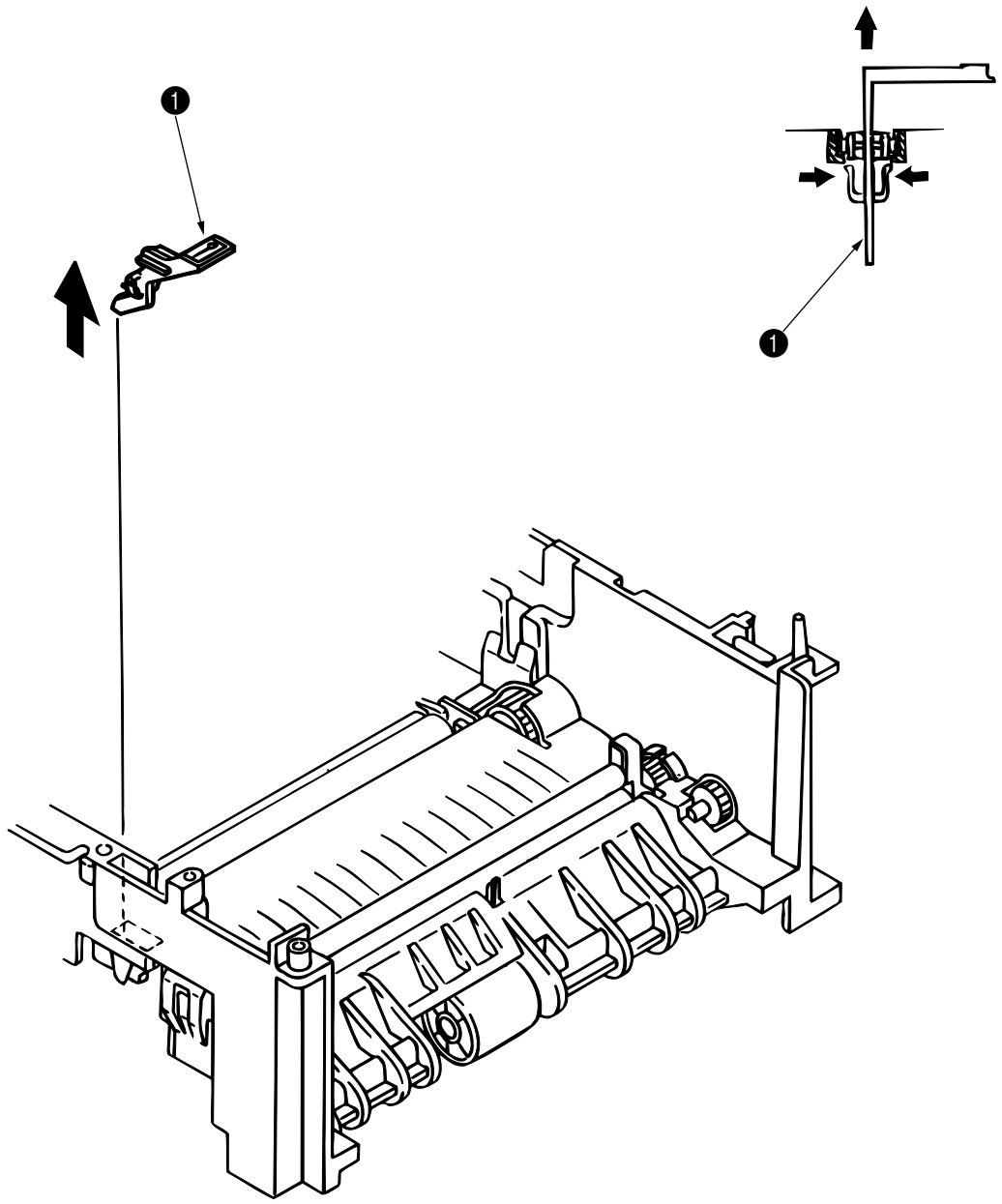


3.3.24 Toner sensor lever

(1) Turn the AC power switch off. Unplug the AC power cord from the outlet.

(2) Remove the frame main [See 3.3.12(7)]

(3) Squeeze the clamp part of toner sensor lever ❶ and remove the toner sensor lever ❶ by pushing it upward from the lower side.

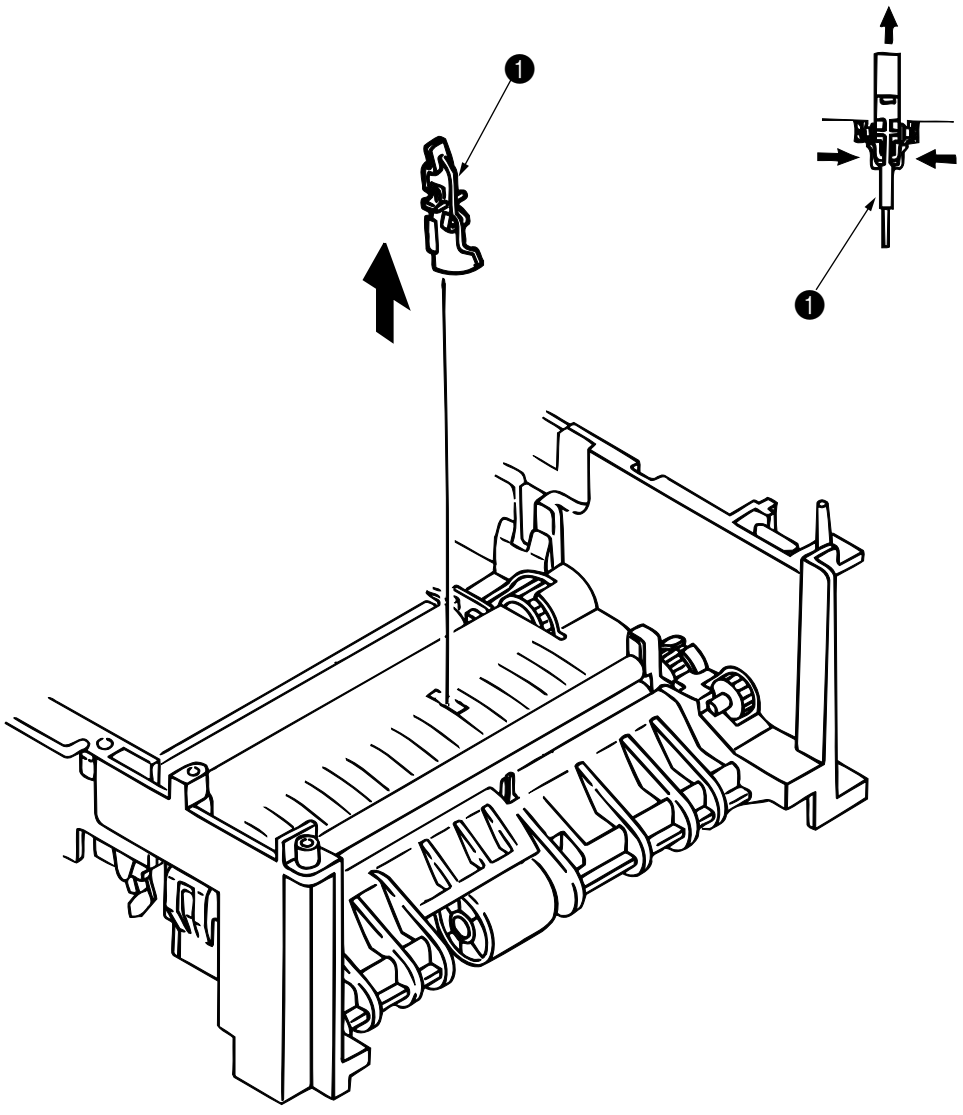


3.3.25 Paper sensor lever

(1) Turn the AC power switch off. Unplug the AC power cord from the outlet.

(2) Remove the frame main [See 3.3.12(7)]

(3) Squeeze the clamp part of the paper sensor lever ❶ and remove the paper sensor lever ❶ by pushing it upward from the lower side.

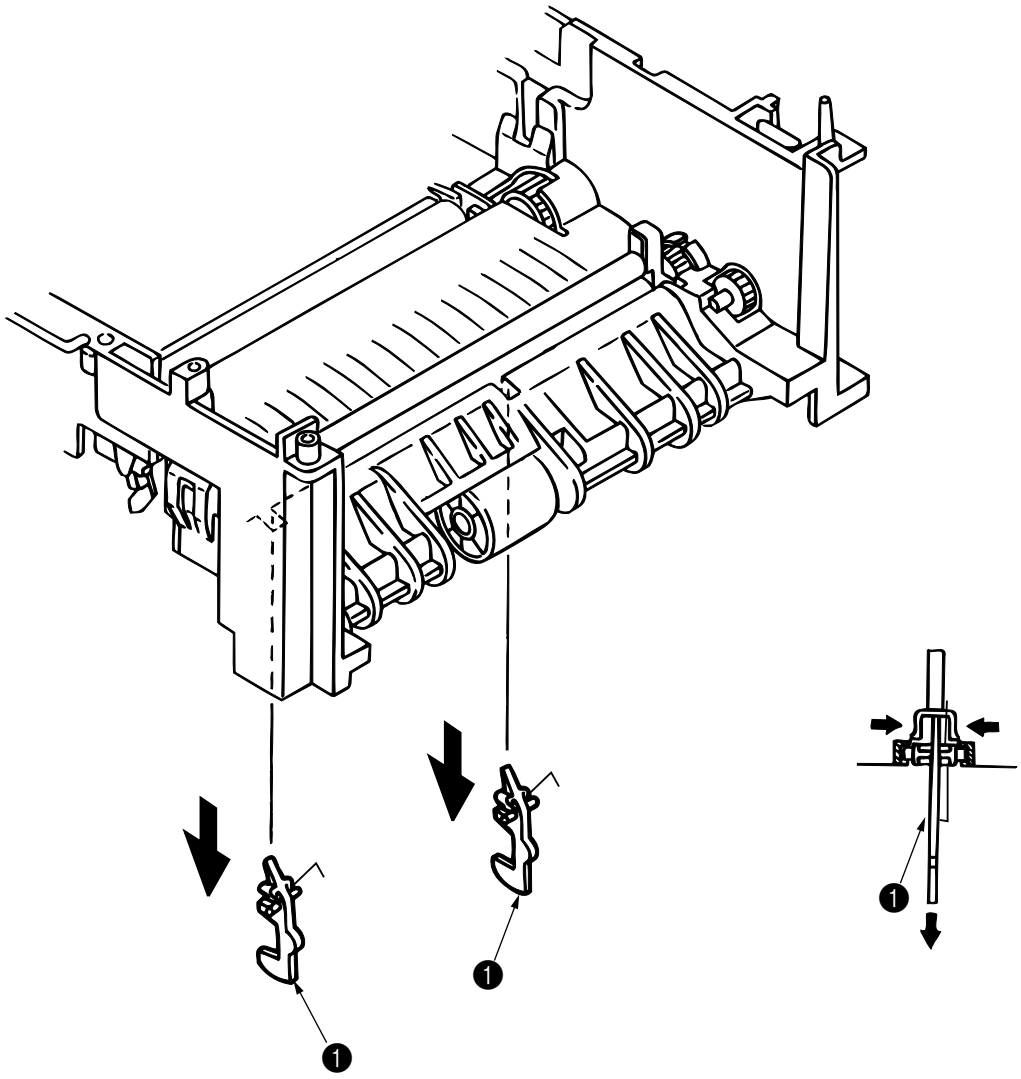


3.3.26 Inlet sensor lever

(1) Turn the AC power switch off. Unplug the AC power cord from the outlet.

(2) Remove the frame main [See 3.3.12(7)]

(3) Squeeze the clamp part of two inlet sensor levers ❶. Remove the inlet sensor levers ❶ by pushing them downward.



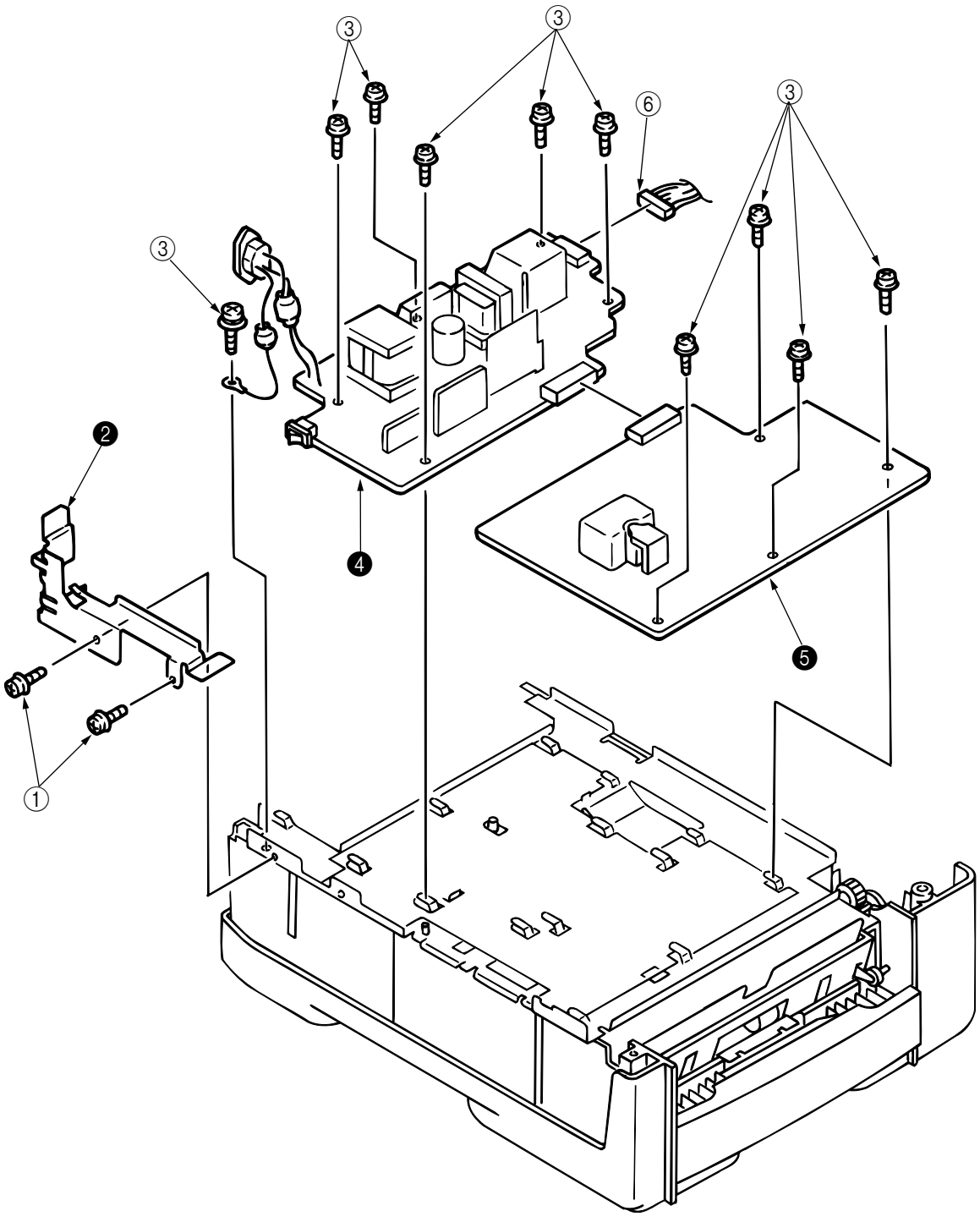
3.3.27 Power supply unit

(1) Turn the AC power switch off. Unplug the AC power cord from the outlet.

(2) Remove the frame main [See 3.3.12(7)]

(3) Unscrew 2 screws ① and remove the BRACKET-AC ❷.

(4) Unscrew 10 screws ③ and remove the connector ⑥ remove the Power supply unit [AC-DC(120/230V)] ❹ and Power supply unit (High voltage) ❺.



3.3.28 Lever-Paper end & Lever-Paper near end

(1) Turn the AC power switch off. Unplug the AC power cord from the outlet.

(2) Remove the frame main [See 3.3.12(7)]

(3) Remove screw ① and then remove the PLATE-Base ❷.

(4) Remove two Spacer-Cord(KGPS-5RF) ❹ and then remove FILM-Insulation ❹.

(5) Remove four screws ⑤ and then remove the FRAME ASS-Hopping ❻.

(6) Remove the GEAR-Z58 ❾ and GEAR-Z42 ❽.
(At this time, the ADF Bearing ❿ can also be detached simultaneously.)

(7) Remove the GEAR-Z38 ⓮, ADF Bearing ⓯, ROLLER-Guide ⓰ and SHAFT Hopping ⓱ and Bracket-Sub roller ㉘.
(At this time, the Kock Pin ⓲ can also be detached simultaneously.)

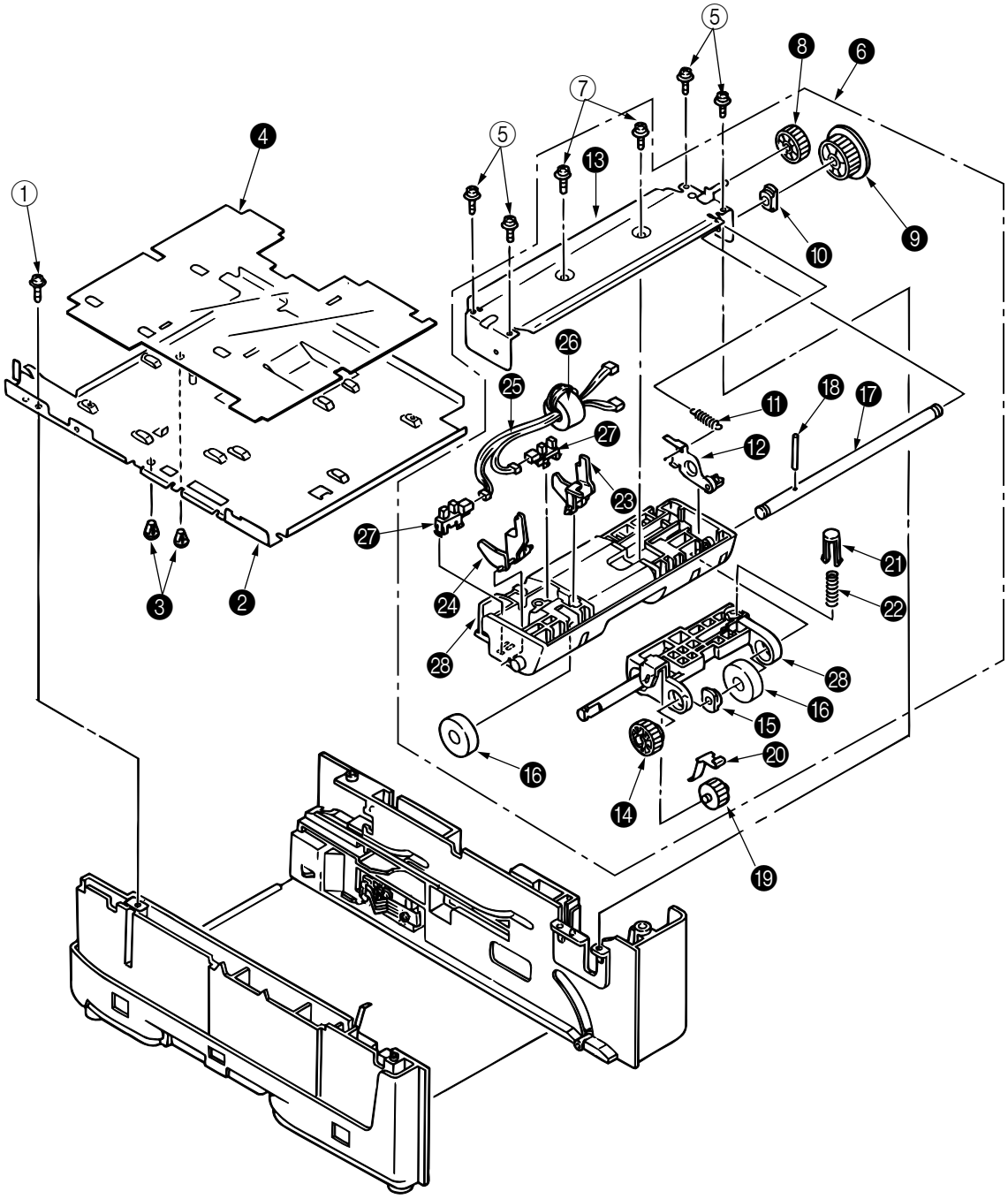
(8) Remove two screws ⑦ and then remove the SPRING-Release ⓫ and then remove the LEVER-Sub roller ⓬ and PLATE-Hopping ⓭.

(9) Remove the GEAR-Planet(Z28) ⓳, Plate-Planet ⓴, BRACKET-Spring (Sub) ㉑ and SPRING-Sub ROLLER ㉒.

(10) Press the clamp part of Lever-Paper end ㉓ and Lever-Paper near end ㉔. Remove the Lever-Paper end ㉓ and Lever-Paper near end ㉔ by pushing it upward from the FRAME Hopping ㉘.

(11) Remove the Connection Cord-Wire ㉕ and TR-23-11-14 R CORE ㉖ together.

(12) Remove two Photo Sensor ㉗.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3.3.29 Guide Assy-Cassette (L)

(1) Turn the AC power switch off. Unplug the AC power cord from the outlet.

(2) Remove Frame Main [See 3.3.12(7)]

(3) Remove PLATE-Base and FRAME Assy Hopping [See 3.3.28 (5)]

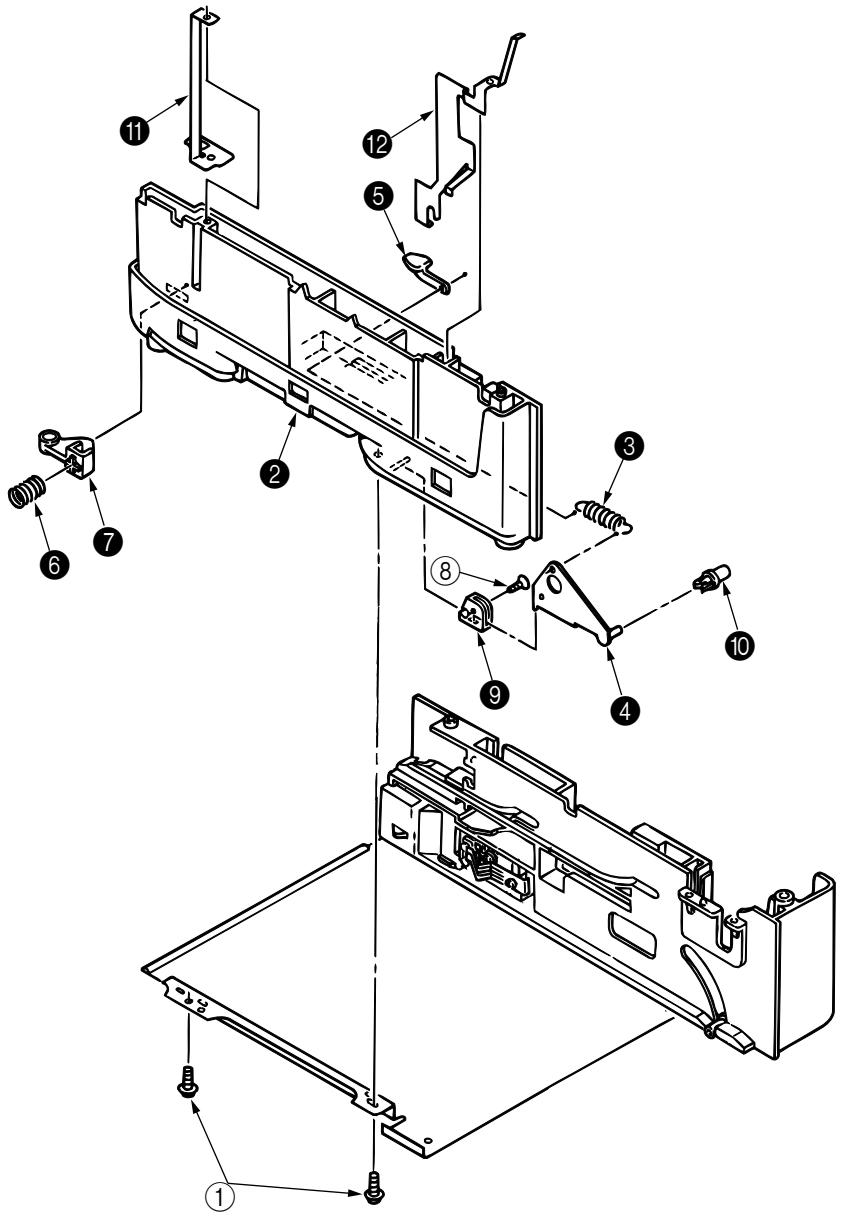
(4) Unscrew two screw ① and then remove Guid Assy-Cassette (L) ❷.

(5) Remove SPRING-Sheet ❸ and then remove LINK-Sheet ❹ and pull block ❺.
(Pay attention the direction of hook of SPRING-Sheet ❸.)

(6) Remove spring ❻ and then remove cassette stopper ❼.

(7) Remove screw ⑧ from LINK-Sheet ❹ and then remove link support ❾ and Roller-link ❿.

(8) Remove Earth Plate L ⓫ and Plate-Earth (link) ⓬.



3.3.30 Guide Assy-Cassette (R)

(1) Turn the AC power switch off. Unplug the AC power cord from the outlet.

(2) Remove Frame Main [See 3.3.12(7)]

(3) Remove PLATE-Base and FRAME Assy Hopping [See 3.3.28 (5)]

(4) Unscrew two screw ① and then remove Guid Assy-Cassette (R) ❷.

(5) Remove SPRING-Sheet ❸ and then remove LINK Sheet ❹ and pull block ❺.
(Pay attention the direction of hook of SPRING-Sheet ❸.)

(6) Remove spring ❻ and then remove cassette stopper ❼.

(7) Remove screw ⑧ from LINK-Sheet ❹ and then remove link support ❾ and Roller-link ❿.

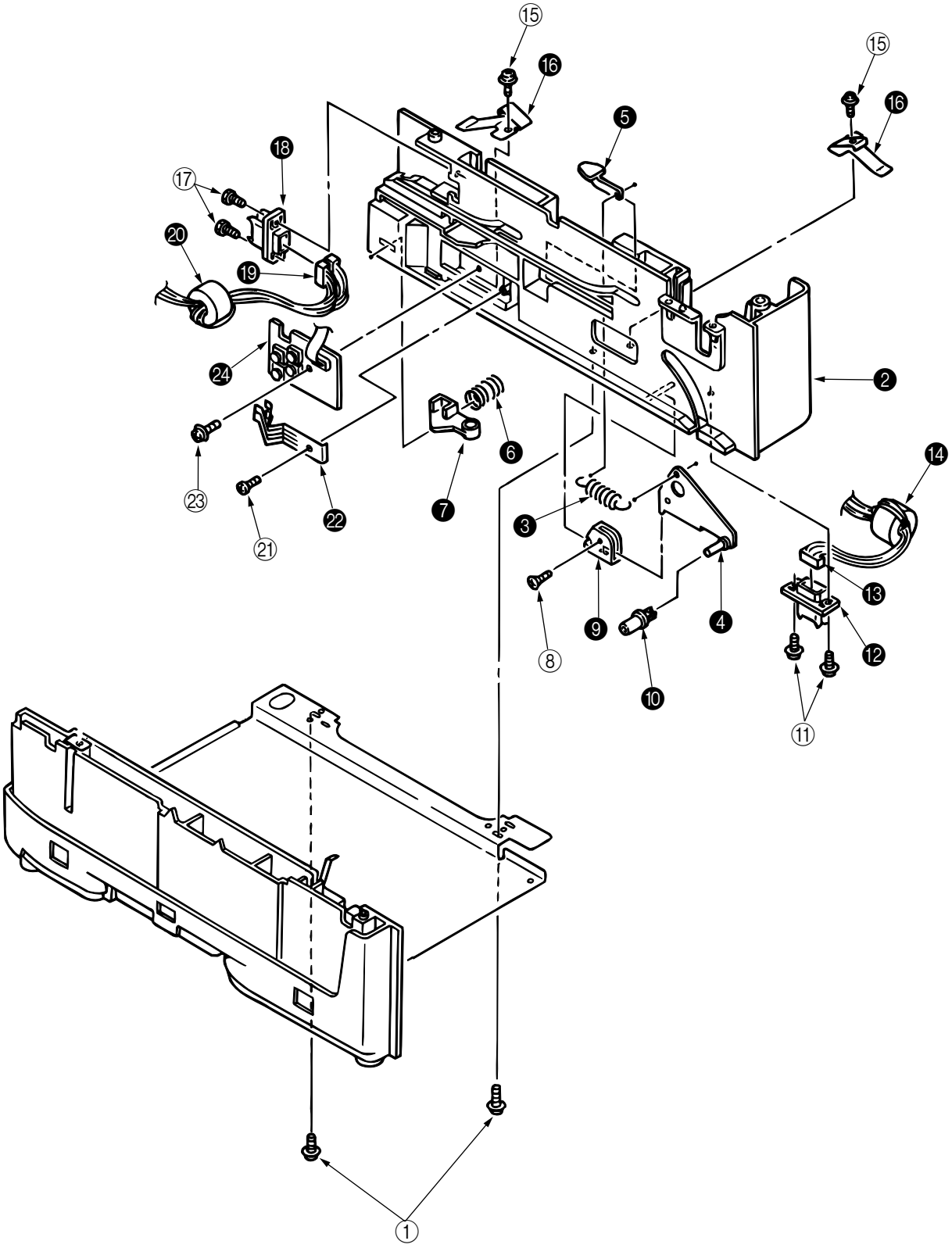
(8) Unscrew two screws ⑪ and remove the Square shaped connector (176496-1) ⓬ and Nylon Connector Cord ⓭ and TR-23-11-R CORE ⓮.

(9) Unscrew two screws ⑮ and remove the two Plate Earth (Bottom) ⓰.

(10) Unscrew two screws ⑰ and remove the Square shaped connector (5-176496-1) ⓲ and Connection Cord Wire ⓳ and TR-23-11-R CORE ⓴.

(11) Unscrew a screw ㉑ and remove the Detector spring ㉒.

(12) Unscrew a screw ㉓ and remove the Board PXC ㉔.


⑮
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①

4. ADJUSTMENT

This chapter explains the adjustment necessary when replacing a part. Adjustment is made by changing a parameter value set in EEPROM on the controller PCB. A parameter is able to set with the key operation on the operator panel. This printer has three kinds of the maintenance mode, it is required to select one of the maintenance mode necessary when replacing a part.

4.1 Maintenance Modes And Functions

- **User maintenance mode**

  To enter the user maintenance mode, turn on the POWER switch while pressing the MENU key.

  [Function]

  There are 13 functions as follows.

  - Menu reset
  - Hex dump
  - Drum counter reset
  - Resource Save
  - Receive Buffer Size
  - Operator panel menu disable
  - X adjust
  - Y adjust
  - Duplex Adjust
  - Select paper source command parameter (Second, Third, Front Tray)
  - Page placement
  - Setting
  - Cleaning cycle

- **System maintenance mode**

  Note: This mode is used only by service persons and it should not be released to the end-users.

  To enter the system maintenance mode, turn on the POWER switch while pressing the RECOVER key.

  [Function]

  There are 8 functions as follows.

  - Page count display
  - Page count printing enable/disable
  - Rolling ASCII continus prinitng
  - RS232C LOOP TEST
  - EEPROM reset
  - HSP ERROR recovery
  - HSP ERROR count display
  - HSP ERROR count reset
  - SIDM enable/disable

- **Engine maintenance mode**

  Note: This mode is used only by service persons and it should not be released to the end-users.

  To enter the engine maintenance mode, turn on the POWER switch while pressing the FORM FEED key and ENTER key.

  [Function]

  There are 19 functions as follows.

  - Head type setting
  - Head drive time setting.
  - Head drive time setting at Auto head type
  - Head strobe time at 600 x 1200 dpi
  - Printing start position setting
  - Drum counter total display
  - Drum count display
  - Setting of standard paper feed length
  - Setting of front feeder paper feed length
  - Setting of second tray paper feed length
  - Selection of second tray feeder download table
  - Setting of third tray paper feed length
  - Selection of third tray feed download table
  - Setting of Multi-purpose feeder paper feed length
  - Selection of Multi-purpose feeder download table
  - Setting of duplex feed length
  - Fuser count indication
  - Fuser count reset
  - Engine reset

4.1.1 User maintenance mode

- To enter the user maintenance mode, turn the power supply ON while pressing the Menu key.
- This mode uses the menu for function selection.
- The user maintenance mode provides the following functions:

(1) Menu reset

- All settings for Menu level-1 are reset to the factory default values.
  The menus for all executable emulations including options are reset to the factory default values.
- The operation mode starts automatically upon completion of resetting.

(2) Hex dump

- The data received from the host is dumped in hexadecimal notation to the printer.
- Printing is activated automatically when the received data exceeds one page. If the received data is less than one page, printing can be activated manually be pressing the Form Feed key after selecting the OFF LINE mode by pressing the ON-LINE key. (Automatic activation of printing even when the received data is less than one page by selecting the Auto Eject function on the menu.)
- To exit from this mode is turning the power OFF.

(3) Drum counter reset

- This function resets the drum life data when the user replaces the image drum unit.
- The operation mode starts automatically upon completion of resetting.

(4) Resource Save

- Set the storage area size of resource to be stored between PCL and Postscript.

(5) Receive Buffer Size

- Set the receiving buffer.

(6) Operator panel menu disable

- This function is for enabling and disabling the operator panel menu functions (Menu 1, Menu 2, Tray Select, Copies and Paper Size).

(7) X ADJUST

- This function is used to adjust the printing start position within the range of ±2 mm in 0.25 mm steps in the X direction.

(8) Y ADJUST

- This function is capable to adjust the printing start position within the range of ±2 mm in 0.25 mm steps in the Y direction.

(9) Duplex adjust

- The function which performs a correction in Y direction towards the sheet supplied from the tray in double-sided printing.

(10) Select paper source command parameter (Second tray)

- The function which sets the parameter selecting the second tray by paper source command (ESC & ℓ # H) on PCL.

(11) Select paper source command parameter (Third tray)

- The function which sets the parameter selecting the third tray by paper source command (ESC & ℓ # H) on PCL.

(12) Select paper source command parameter (Front tray)

- The function which sets the parameter selecting the front tray by paper source command (ESC & ℓ # H) on PCL.

(13) Page placement

- The function which aligns a printing image to the right.

(14) SETTING

- This function is used to adjust to improve print quality.

-2 -1	Rough/thick paper, Low temperature/humidity and/or blockly faded print appeared.
0	Nomal media/enviroumental conditions.
+1 +2	Rough papers, high temperature/humidity and/or snowy print of high density pattern.

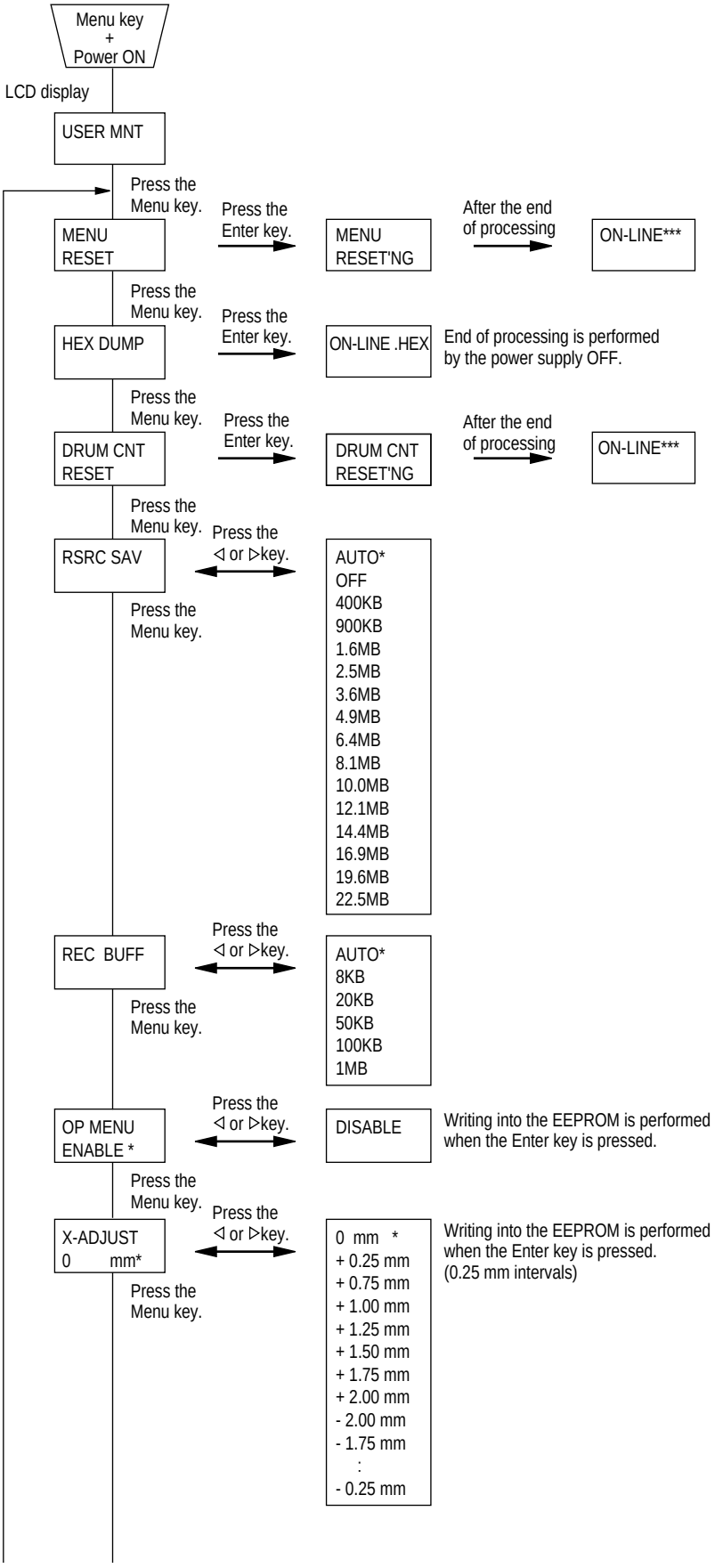
(15) Cleanig cycle

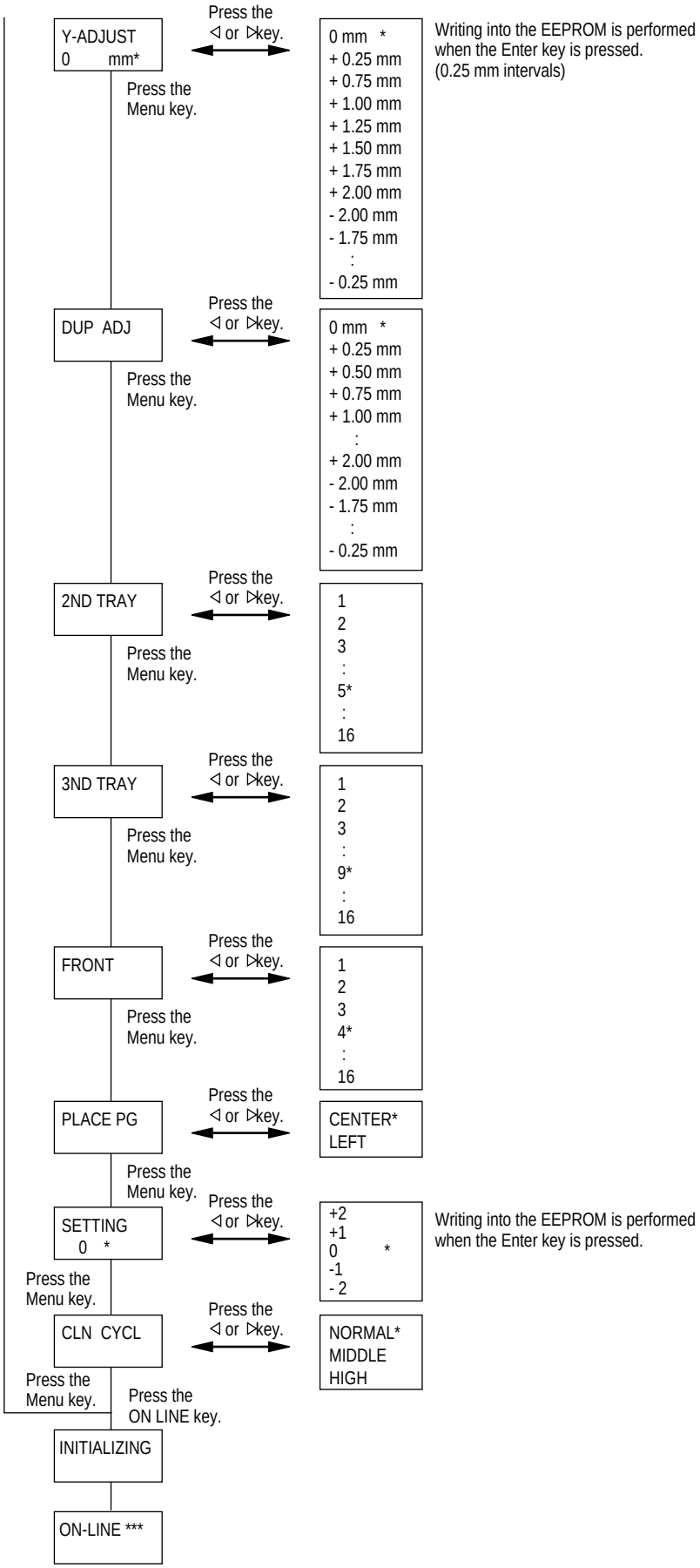
- Set the page interval to perform Cleaning Sequence.

  When stains build up especially in using rough papers. Change the cleaning cycle. The shorter the cycle is set, the less the stains become.

  Normal : Each 20th page (default)
  Middle : Each 10th page
  High : Each 3th page

User maintenance mode menu system




Y-ADJUST
0 mm*
Press the ◁ or ▷key.
0 mm *
+ 0.25 mm
+ 0.75 mm
+ 1.00 mm
+ 1.25 mm
+ 1.50 mm
+ 1.75 mm
+ 2.00 mm
- 2.00 mm
- 1.75 mm
:
- 0.25 mm
Writing into the EEPROM is performed when the Enter key is pressed. (0.25 mm intervals)
Press the Menu key.
DUP ADJ
Press the ◁ or ▷key.
0 mm *
+ 0.25 mm
+ 0.50 mm
+ 0.75 mm
+ 1.00 mm
:
+ 2.00 mm
- 2.00 mm
- 1.75 mm
:
- 0.25 mm
Press the Menu key.
2ND TRAY
Press the ◁ or ▷key.
1
2
3
:
5*
:
16
Press the Menu key.
3ND TRAY
Press the ◁ or ▷key.
1
2
3
:
9*
:
16
Press the Menu key.
FRONT
Press the ◁ or ▷key.
1
2
3
4*
:
16
Press the Menu key.
PLACE PG
Press the ◁ or ▷key.
CENTER*
LEFT
Press the Menu key.
SETTING
0 *
Press the ◁ or ▷key.
+2
+1
0 *
-1
- 2
Writing into the EEPROM is performed when the Enter key is pressed.
Press the Menu key.
CLN CYCL
Press the ◁ or ▷key.
NORMAL*
MIDDLE
HIGH
Press the Menu key.
Press the ON LINE key.
INITIALIZING
ON-LINE ***

4.1.2 System maintenance mode

- The system maintenance mode is set when the power is turned ON while pressing the Recover key.
- This mode adopts the menu for function selection.
- The system maintenance mode is provided with the following functions:

(1) Page count display

- The total number of pages counted at the engine is displayed on the LCD.

(2) Page count printing enable/disable

- This function selects whether to include (enable) or exclude (disable) the total number of printed pages counted at the engine at the time of menu printing.

(3) Rolling ASCII continuous printing

- The rolling ASCII pattern is printed continuously for various engine tests.
- Press the ON-LINE key to cancel this mode.

(4) RS232C LOOP TEST

- Performs a loop test of RS 232C.

(5) EEPROM reset

- All EEPROM areas including Menu level-2 to the factory default values.
- The following items are excluded

  * Head drive time setting

  * Fine adjustment of printing start position

  * Standard tray paper feed amount setting

- Transition to the operation mode occurs upon completion of resetting.
- Press the Menu key to update each category.
  The operation returns to the first category after updating the last category.

(6) HSP ERROR recovery

- Select HSP ERROR recovery function either recover or stop.

(7) HSP ERROR count

- Display total HSP ERROR count.

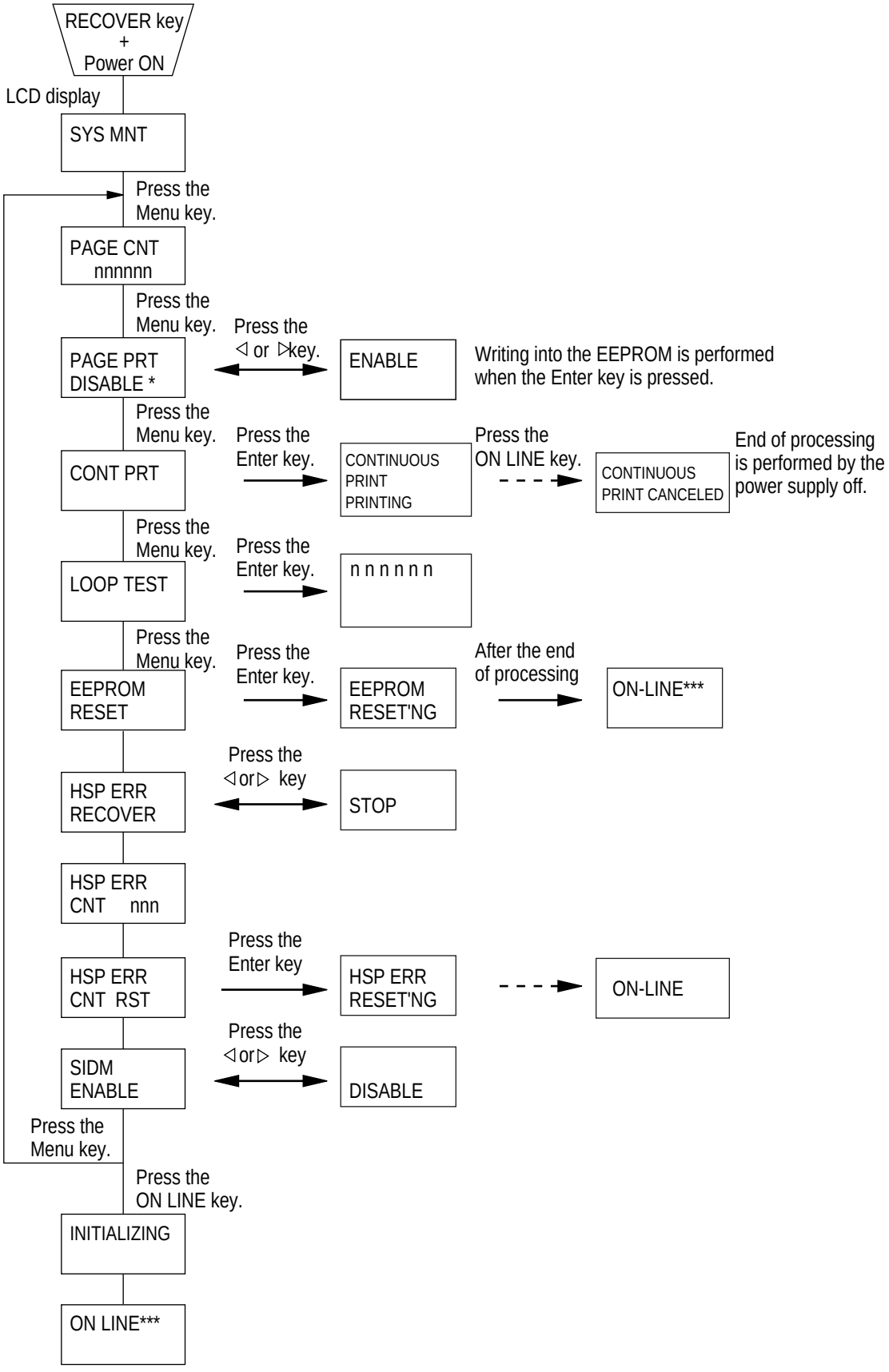
(8) HSP ERROR count reset

- Reset the HSP ERROR counter.

(9) SIDM enable/disable

- If it's selected disable, cannot select SIDM emulations by Menu.

System maintenance mode menu system



4.1.3 Engine maintenance mode

- The engine maintenance mode is activated when the power is turned ON while pressing to the Form Feed key and Enter key.
- This mode adopts the menu for function selection.
- The method for exit from this mode depends on the setting.
- The engine maintenance mode is provided with the following functions:

(1) Head type setting select LED Head type

- Sets the select LED head type.

(2) Head drive time setting

- Sets the drive time of the LED head.

(3) Head drive time setting at auto head type

- This function sets head drive time, when " HEADTYPE= AUTO" is selected.

(4) Head strobe time at 600 x 1200 dpi

- This function sets head strobe time at 600 x 1200 dpi.

(5) Printing start position setting

- Sets the printing start position.

(6) Drum count total display

- Displays on the LCD the total number of drum revolutions in the unit counted at the engine.

(7) Drum count display

- Displays on the LCD the total number of EP drum revolutions counted at the engine.

(8) Setting of standard tray paper feed length

- This function sets the paper feed length of standard tray paper.

(9) Setting of front feeder paper feed length

- This function sets the paper feed length of the front feeder.

(10) Setting of High Capacity Second Paper Feeder paper feed length

- This function sets the paper feed length of the High Capacity Second Paper Feeder.

(11) Selection of High Capacity Second Paper Feeder download table

- This function selects the download table for the High Capacity Second Paper Feeder.

(12) Setting of High Capacity Third Paper Feeder paper feed length

- This function sets the paper feed length of the High capacity Third paper feeder.

(13) Selection of High Capacity Third paper feeder download table

- This function selects the download table for the High capacity third paper feeder.

(14) Setting of Multi Feeder paper feed length

- This function sets the paper feed length of the Multi Feeder.

(15) Selection of Multi Feeder download table

- This function selects the download table for the Multi Feeder.

(16) Setting of duplex feed length

- This function sets the paper feed length of the duplex.

(17) Fuser count display

- Displays on the LCD the total number of printed pages counted at the engine.

(18) Fuser count reset

- When the fuser unit is replaced, the maintenance person uses this fuser count reset function to reset the fuser lifetime.
- After the fuser counter is reset, the engine enters into the operation mode automatically

(19) Engine reset

- All EEPROM areas used by the engine are reset to the factory default values.
- The following items are excluded:

  * Menu level-1

  * Menu level-2

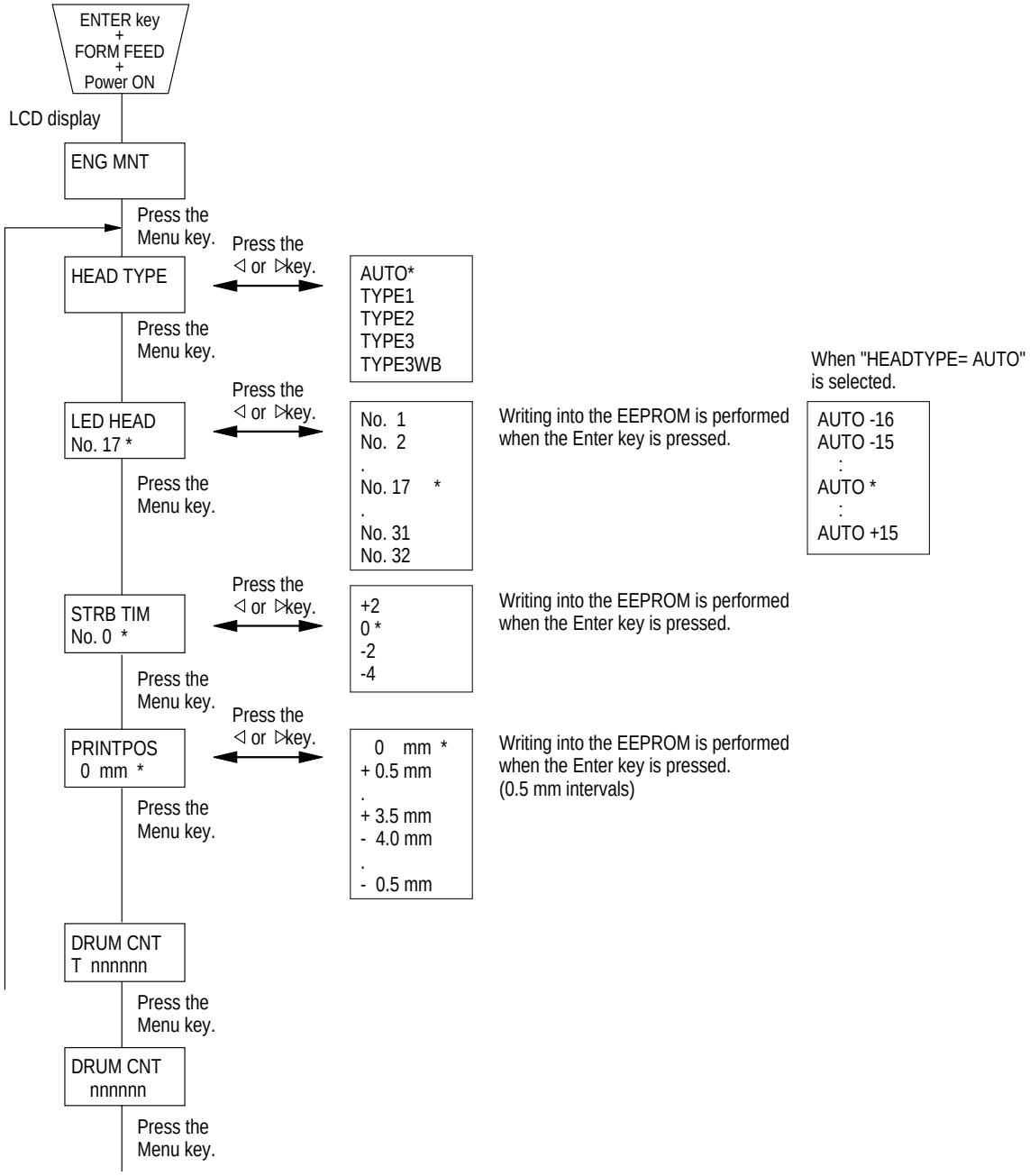
  * Operator panel menu disable/enable

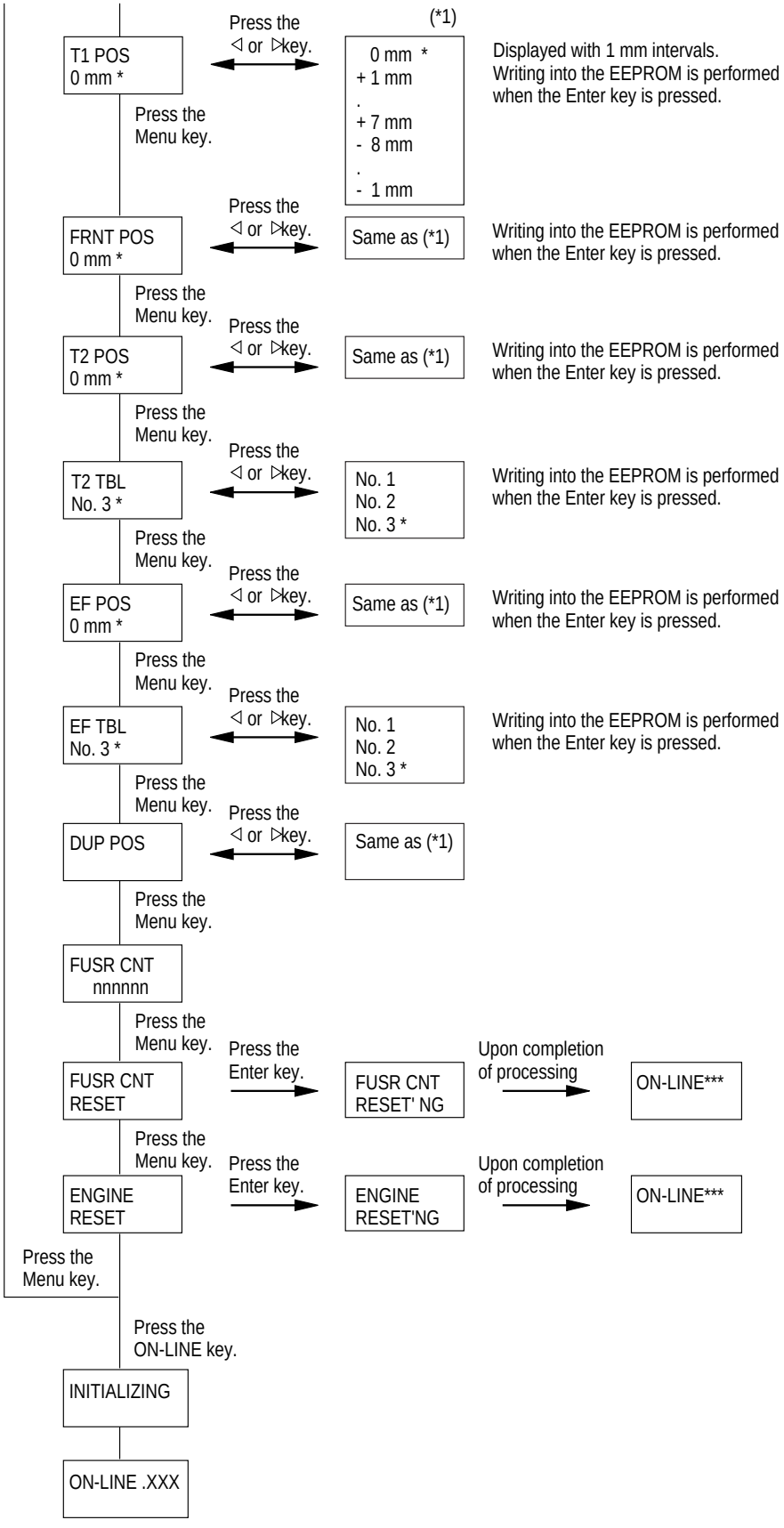
  * Page print disable/enable

- Transition to the operation mode occurs upon completion of resetting.

Note: Do not change the default value of (1)~ (5), (8)~ (16) they are the parameter for adjusting in the factory.

- Engine maintenance mode menu system




(*1)
T1 POS
0 mm *
Press the ◁ or ▷key.
0 mm *
+ 1 mm
.
+ 7 mm
- 8 mm
.
- 1 mm
Displayed with 1 mm intervals.
Writing into the EEPROM is performed when the Enter key is pressed.
Press the Menu key.
FRNT POS
0 mm *
Press the ◁ or ▷key.
Same as (*1)
Writing into the EEPROM is performed when the Enter key is pressed.
Press the Menu key.
T2 POS
0 mm *
Press the ◁ or ▷key.
Same as (*1)
Writing into the EEPROM is performed when the Enter key is pressed.
Press the Menu key.
T2 TBL
No. 3 *
Press the ◁ or ▷key.
No. 1
No. 2
No. 3 *
Writing into the EEPROM is performed when the Enter key is pressed.
Press the Menu key.
EF POS
0 mm *
Press the ◁ or ▷key.
Same as (*1)
Writing into the EEPROM is performed when the Enter key is pressed.
Press the Menu key.
EF TBL
No. 3 *
Press the ◁ or ▷key.
No. 1
No. 2
No. 3 *
Writing into the EEPROM is performed when the Enter key is pressed.
Press the Menu key.
DUP POS
Press the ◁ or ▷key.
Same as (*1)
Press the Menu key.
FUSR CNT
nnnnnn
Press the Menu key.
FUSR CNT
RESET
Press the Enter key.
FUSR CNT
RESET' NG
Upon completion of processing
ON-LINE***
Press the Menu key.
ENGINE
RESET
Press the Enter key.
ENGINE
RESET'NG
Upon completion of processing
ON-LINE***
Press the Menu key.
Press the ON-LINE key.
INITIALIZING
ON-LINE .XXX

4.1.4 EEPROM initialization

The corresponding area of the EEPROM is initialized for each event as shown Table 4-1 and Table 4-2.

Table 4-1 EEPROM Initial Setting Range

No	Event	Menu Level 1	Menu level 2	F/W Revision Range	Destination Information	Users Maintenance Range (noe1)	Systems Maintenance Range (note1)	Engine Maintenance Range (note1)	Drum Counter	Fuser Counter	Total Print Number	HSP
1	Users Maintenance Menu Reset	○										
2	Systeems Maintenance EEPROM Reset	○	○			○	○					
3	Engine Maintenance Engine Reset							○	○			
4	Firm Revision Check Error Power On	○	○	○		○	○					
5	Engine ID Check Error at Power On							○	○	○	○	○
6	Setting for Shipping Destination	○	○		○	○	○					
7	Users Information Error	○	○		○	○	○					

Note 1 : The items for each maintenance menu of the events are to be listed.

Table 4-2 Items Related to Each Maintenance Menu of EEPROM Reset

Users Maintenance Menu Range	Systems Maintenance Menu Range	Engine Maintenance Menu Range
Resource Save	Enable/ Disable of Total Number of Menu Print	Correction head type (excluding the time upon engine maintenance engine reset)
Receive Buffer	Enable/ Disable of Switching SIDM Emulation	LED head drive time (excluding the time upon engine maintenance engine reset)
Enable/ Disable of Operator Panel Menu Function		600 x 1200dpi strobe time relative value (excluding the time upon engine maintenance engine reset)
X/ Y/ DUP ADJUST		Print start position
Paper Feed Command of 2nd/ 3rd/ Front Trays		Paper feed distance from each tray
Print Shift to Left Based		Paper feed distance from the Duplex Unit
Cleaning Cycle		Control parameter of each option tray motor
		Engine test

4.2 Adjustment When Replacing A Part

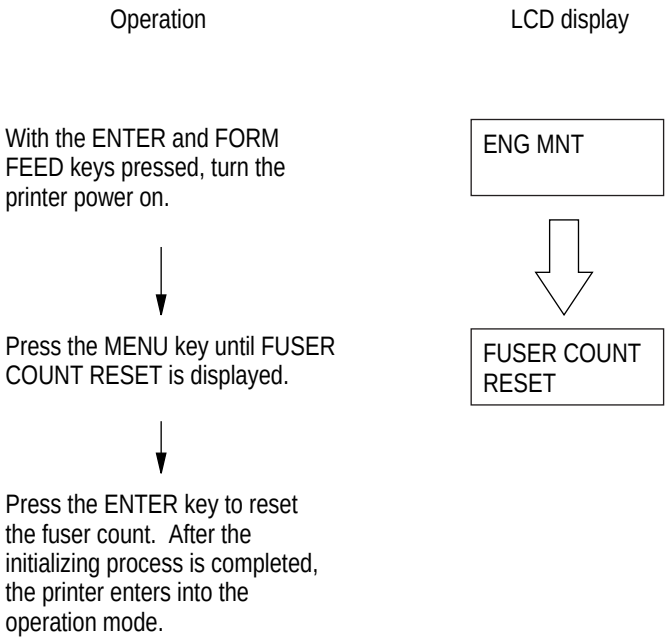
Adjustment necessary when replacing one of the followimg parts.

Part Replaced	Adjustment
Image Drum Cartridge	Reset the image drum counter. (Refer to User's manual)
Fuser Unit	Reset the fuser counter. (Refer to Chapter 4.2.1)

4.2.1 Resetting the fuser counter

(1) The fuser counter can be reset in the engine maintenance mode.

(2) Resetting method


Operation
LCD display
With the ENTER and FORM FEED keys pressed, turn the printer power on.
ENG MNT
Press the MENU key until FUSER COUNT RESET is displayed.
FUSER COUNT RESET
Press the ENTER key to reset the fuser count. After the initializing process is completed, the printer enters into the operation mode.

4.2.2 Destination setting

The desired destination can be set by turning the power on while depressing two keys corresponding to the destination according to the following table.

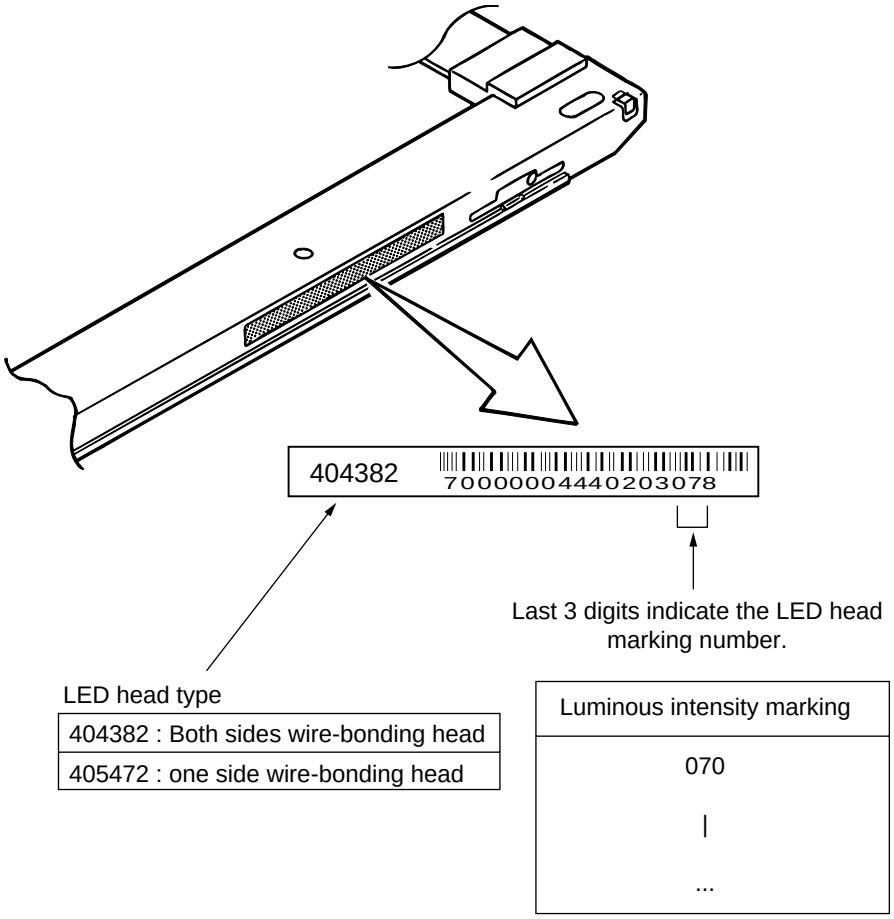
Destination	Keys to be depressed
ODA	MENU, ⊳
OEL	MENU, ⊲
OKI-INT-A (Australia, etc.)	MENU, PAPER SIZE
OKI-INT-L (Singapore, etc.)	MENU, TRAY TYPE

This function shall not be open for users.

4.2.3 Setting of LED head drive time

As the OKIPAGE18/ OKIPAGE 20Plus automatically judges head type and head drive time, there is no need for changing any setting in replacing LED head.
But individual setting can be changed by ENGINE Maintenance menu as before.
The procedure in such case shown below.

- Luminous intensity marking label



- Setting of LED head drive time

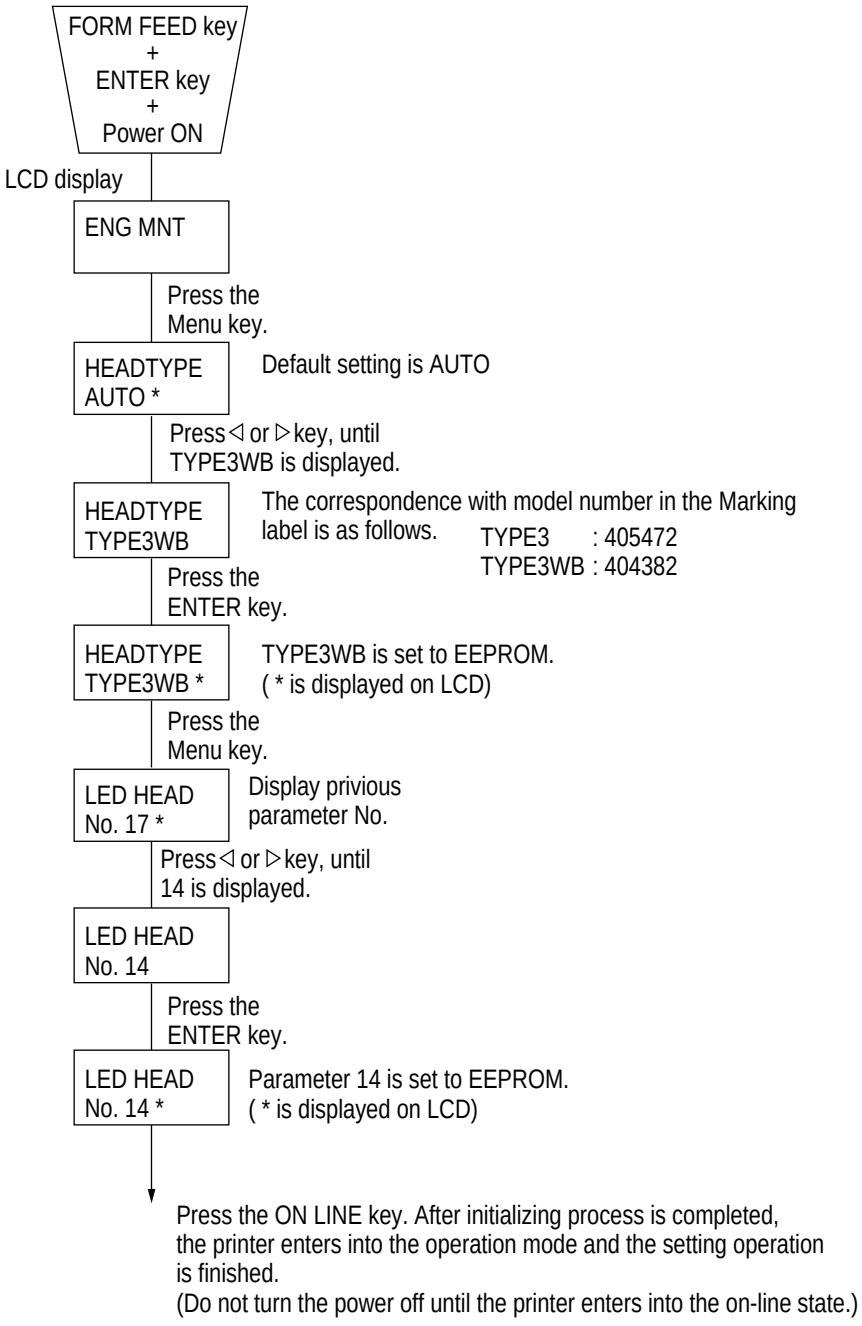
  Drive time of the LED head is to set parameter of drive time setting values corresponding to the luminous intensity displayes marked on the LED head to EEPROM.

  a. Corresponding table of luminous energy display and drive time parameter

Luminous intensity display on LED head	Drive time parameter	Luminous intensity display on LED head	Drive time parameter
0.27 ~ 0.28	25	0.61 ~ 0.64	13
0.29 ~ 0.30	24	0.65 ~ 0.69	12
0.31 ~ 0.32	23	0.70 ~ 0.73	11
0.33 ~ 0.35	22	0.74 ~ 0.79	10
0.36 ~ 0.37	21	0.80 ~ 0.84	9
0.38 ~ 0.40	20	0.85 ~ 0.90	8
0.41 ~ 0.43	19	0.91 ~ 0.96	7
0.44 ~ 0.46	18	0.97 ~ 1.03	6
0.47 ~ 0.49	17	1.04 ~ 1.10	5
0.50 ~ 0.52	16	1.11 ~ 1.18	4
0.53 ~ 0.57	15	1.19 ~ 1.26	3
0.58 ~ 0.60	14	1.27 ~ 1.35	2

b. Setting

Example : When setting head type to TYPE3WB(both-sided wire-bonding head) and head drive time to No. 14.



5. PERIODIC MAINTENANCE

5.1 Periodic Replacing Part

As specified below, the parts shall be replaced periodically.

Part name	Condition for replacement	Cleaning	Remarks
• Toner cartridge	5,000	• LED head. • Regist Paper dust.	Consumables
• Image drum cartridge	30,000	• LED head. • Regist Paper dust.	Consumables
• Heat Assy	200,000		
• Transfer Roller	200,000		
• Back up Roller Assy	200,000		
• Feed Roller Assy	200,000		
• Hopping Roller Assy	200,000		
• Separation Frame Assy	200,000		

5.2 Cleaning

Remove any toner and dust. Clean inside and around the printer with a piece of cloth when necessary. Use the handy cleaner (VACUUM) for cleaning the printers interior.

Note: Do not touch image drum, LED lens array, and LED head connector block.

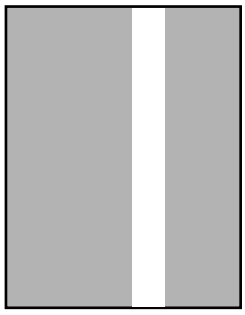
5.2.1 Cleaning of LED lens array

Clean the LED lens array or replace the toner cartridge when white lines or stripes (void, light printing) are generated vertically down the page.

Note: The LED lens array must be cleaned with an LED head cleaner.

White lines or stripes

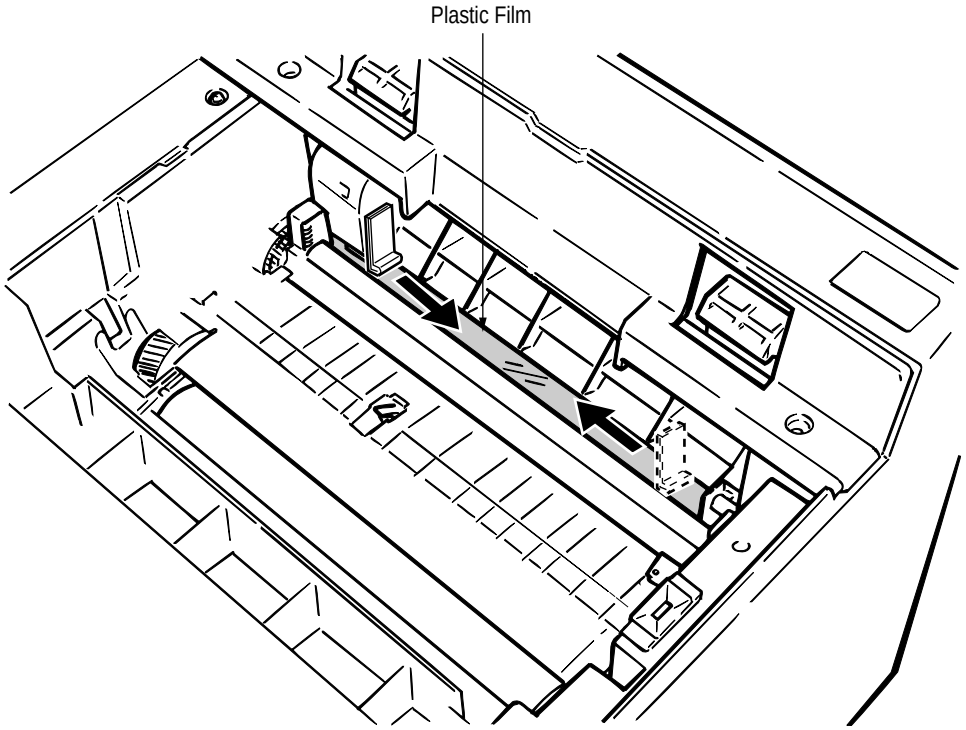
(void, light printing)



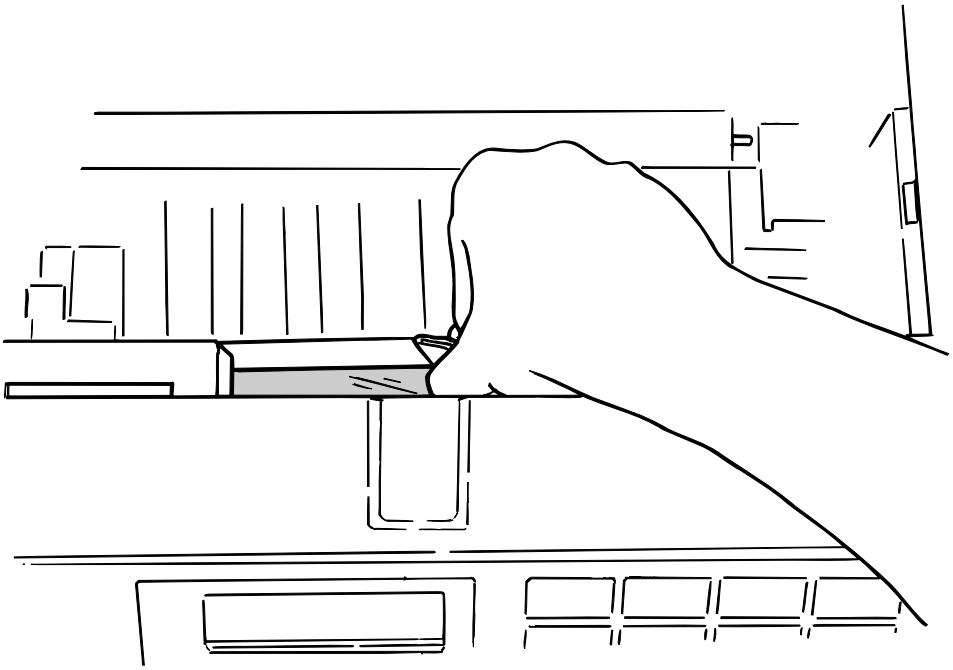
5.2.2 Cleaning the Plastic Film

(1) Open the stacker assy and remove I/D unit.

(2) After cleaning LED head, wipe off the paper powder by LED LENS CLEANER and remove the paper powder.



(3) Take the remove paper powder out of the printer unit in such a way as not to spill it, and then waste it.



6. TROUBLESHOOTING PROCEDURES

6.1 Troubleshooting Tips

(1) Check the basic check points covered in the user's manual.

(2) Gather as much information on the problem from the customer as possible.

(3) Perform inspections in conditions close to those in which the problem had occurred.

6.2 Points to Check before Correcting Image Problems

(1) Is the printer being run in proper ambient conditions?

(2) Have the supplies (toner) and the routine replacement part (image drum cartridge) been replaced properly?

(3) Is the paper normal? See paper specifications section.

(4) Has the image drum cartridge been loaded properly?

6.3 Tips for Correcting Image Problems

(1) Do not touch, or bring foreign matter into contact with the surface of the image drum.

(2) Do not expose the image drum to direct sunlight.

(3) Keep hands off the fuser unit as it is heated during operation.

(4) Do not expose the image drum to light for longer than 5 minutes at room temperature.

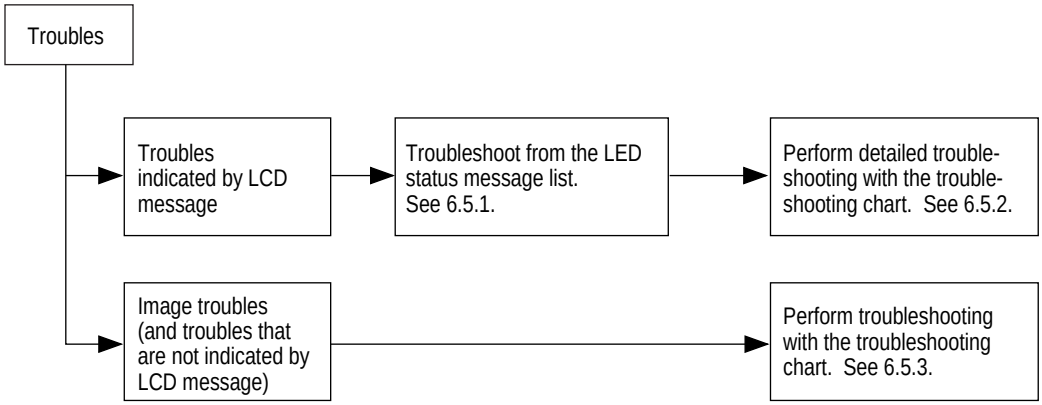
6.4 Preparation for Troubleshooting

(1) Operator panel display

The failure status of this printer is displayed on the liquid crystal display (LCD) in the operator panel. Take proper corrective action as directed by messages that are displayed on the LCD.

6.5 Troubleshooting Flow

If troubles should develop in this printer, troubleshoot in the following procedure flow:


Troubles
Troubles indicated by LCD message
Troubleshoot from the LED status message list. See 6.5.1.
Perform detailed trouble-shooting with the trouble-shooting chart. See 6.5.2.
Image troubles (and troubles that are not indicated by LCD message)
Perform troubleshooting with the troubleshooting chart. See 6.5.3.

6.5.1 LCD status message/trouble list

Table 6-1 lists the status and troubles that may be indicated by messages on the LCD.

LED status

● : OFF ◌ : BLINK
◍ : ON ○ : Undefined

Category	LCD status message	Trouble or status	Remedy

Daily status	READY
	ATTENTION
	`ON-LINE .xxx`
	`dddddd ttttt`
		Indicates on-line status
		
		ttttt: Tray
		(TRAY 1, TRAY 2, TRAY3, and FRONT MANUALFEEDER)
		
		Tn: Cassette tray
		(T1; TRAY 1, T2; TRAY 2, T3; TRAY 3)
		
		mmmmmmmmm: Paper size in the tray being selected (LETTER, EXECUTIVE, LEGAL 14, LEGAL 13,A4 SIZE, A5 SIZE, A6 SIZE, B5 SIZE, COM-10,MONARCH, COM-9, DL ENV, C5 ENV, C4 ENV)
		
		xxx: Emulation in operation
		(AUT, PCL, PS, PPR, FX, and HEX)
		
		dddddd: The mode of both-sided printing/ one-sided printing is indicated.
		(DUPLEX, SIMPLEX)
			Normal operation

	READY
	ATTENTION
	`OFF-LINE .xxx`
	`dddddd ttttt`
		Indicates off-line status	

	READY ATTENTION `PROCESSING .xxx`	Indicates during data receiving or outputting	
	READY ATTENTION `DATA PRESENT.xxx`	Indicate that not-yet-printed data is remained in the buffer. In a state of waiting for following data.	In the off-line mode, the data is printed by pressing the FORM FEED button.

Category	LCD status message	Trouble or status	Remedy
Daily status	READY ○ ATTENTION ○ PRINTING	Indicate that the printer is printing.	Normal operation
	READY ◉ ATTENTION ● FLUSHING JOB	Indicates that job flush is designated and the state in which data is received and abandoned until the completion of a job.	
	READY ◉ or ◉ ATTENTION ○ RESET TO FLUSH	Mean that, in shifting to off line in data-remaining state, if you want to abandon the data being processed, execute the reset.	Flushing job: Press the RESET button. Resume: Press the ON LINE button.
	READY ○ ATTENTION ○ PS NOT AVAILABLE	Indicates that not-installed printer language is designated by PJL command (Warning). When CLEARABL WRNINGS= ON has been selected in the menu, this indication is cleared by pressing Recover switch.	Warning
	READY ○ ATTENTION ○ POWER SAVING	Informs that the printer becomes-power-save status (heater off). This is indicated in combination with other messages of the first line.	Normal operation
	READY ○ ATTENTION ○ PAPER NEARED Tn	Informs that the sheets are near to end in a tray cassette (common with 1st/ 2nd/ 3rd). when the remaining reaches 20 sheets, it is detected.	Warning

Category	LCD status message	Trouble or status	Remedy
Daily status	READY ○ ATTENTION ● or ○ TONER LOW	Informs that the amount of toner low This is indicated in combination with other messages of the first line. Normal operation is possible. But when "LOW TONER= OFF" has been selected in the menu, ATTENTION LED will flash.	Replace the toner cartridge.
	READY ○ ATTENTION ● TONER SENSOR	Informs that toner sensor detects an error. But when the total drum count were > 30 pages, this error would be indicated, when the total drum count were= < 30 pages, an impossible-to reset alarm "ERROR 77" , which will be described later, would be indicated. This is indicated in combination with other messages of the first line. Normal operation is passible.	Check the operation of the toner sensor lever. Replace the Power Supply Unit (High Voltage) Replace the main board. Note: When replacing the main board, install the EEPROM mounted on the replaced main board.
	READY ○ ATTENTION ● CHANGE DRUM	Informs of the drum life. This is indicated in combination with other messages of the first line. Normal operation is enabled if desired.	Repace the image drum cartridge. Note: After replacing the drum cartridge, reset the drum counter. (Refer to the User's Manual)
	READY ○ ATTENTION ● FUSER LIFE	Informs that the life of a replaceable part such as fuser (fusing device) and roller. This is indicated in combination with other messages of the first line. Normal operation is possible.	Replace the fuser unit. Note: After replacing the fuser unit reset the fuser counter. (Refer to chapter 4.2.1)
	READY ○ or ● ATTENTION ○ COPY nnn/mmm	Indicates that the number of sheets in current printing when the number of copies is two or more.	Normal operation.
	READY ● ATTENTION ● RESET	Deletes not-yet-printed data within the buffer and initiates the status of the printer to user default. Temporary DLL/ macro/ user pattern will be deleted.	Normal operation

Category	LCD status message	Trouble or status	Remedy
Daily status	READY or ATTENTION PRINT FONTS	Prints all the fonts which are included in the printer. Ready Light on: execution by command Ready Flash: execution by switch.	Normal operation.
	READY ATTENTION DRUM CLEANING MANUAL mmmmmm REQUEST	Indicates that the printer is under cleaning printing process. The second line will become "MANUAL LETTER REQUEST" or "MANUAL A4 SIZE REQUEST"	Set requested paper to front tray, and press FORM FEED button.
	READY or ATTENTION PRINT DEMO PAGE	Prints the demo page. Ready light on: execution by command Ready flash: execution by switch	Normal operation
	READY or ATTENTION PRINT MENU	Prints current menu setting. Ready Light on: execution by command Ready Flash: execution by switch	Normal operation
	READY ATTENTION mmmmmmmmm MANUAL YYYYYYYY REQUEST	Requests that a sheet indicated in the second line message is inserted by hans. YYYYYYYY: sheet type (PAPER, ENVELOPE)	Set requested paper to front tray, and press FORM FEED button.
	READY ATTENTION PRESS FORM FEED TO EJECT	Promotes an forced exit by FORM FEED switch when the time set in WAIT TIME OUT of AUTO OPERATION in the level 2 menu has been passed since no data received.	Press FORM FEED button.

Category	LCD status message	Trouble or status	Remedy
Daily status	READY ● ATTENTION ○ STACKER FULL REMOVE THE PAPER	Indicates that the face down stacker is full with sheets.	Remove the paper from the stacker. Repair the broker stacker sensor cable. Repeat the insertion and removal of the connector. Clean or replace the stacker full sensor.
	READY ● ATTENTION ○ PAPER OUT mmmmmmmmmm tttttt	Indicates that no paper or paper cassette in a tray.	Load a paper or paper cassette to the tray.
	READY ● ATTENTION ○ tttttt INSTALL	IIndicates that, in an attempt to use the third tray, the first or second tray which is the medium of the path is pulled out. Indicates that, in an attempt to use the second tray, the first tray which is the medium of the path is pulled out. Provisions: The first and second tray should be returned.	Install the displayed tray.
	READY ● ATTENTION ○ mmmmmmmmm tttttt PAPER REQUEST	Requests that a sheet indicated in the first line message is inserted.	Load the requested paper in tray.
	READY ○ ATTENTION ● ERROR POSTSCRIPT	Indicates that the interpreter detects an error due to the following reasons. From this point on, the receiving data is flushed until the completion of a job. It is automatically canceled when job receiving is completed.	Warnig. Check the print job format.
	READY ● ATTENTION ○ ERROR MEMORY OVERFLOW	Indicates that the capacity of memory is Overflowed due to the following reasons. The operation is continued by pressing Recover switch. Additional RAM should be installed or the amount of data be reduced. -Too large printing data within one page. -Too large macro data. -Too large DLL data. -Overflow after the compression of frame buffer.	Press the RECOVER key on the operator panel to release the error display. Install an expansion optional RAM or reduce the amount of print data.

Category	LCD status message	Trouble or status	Remedy
Daily status	READY ● ATTENTION ○ ERROR RECEIVE BUFFER OVERFLOW	Informs that the data within the receiving buffer Overflows. The operation is continued by pressing Recover switch. The host side should be changed in settings to be able to recognize a printer Busy status and the data be re-transmitted.	Press the RECOVER key on the operator panel to release the error display. Change the setting of the host side so that the host can detect the busy state of the printer. Resend the data from the host side to the printer.
	READY ● ATTENTION ○ ERROR PRINT OVERRUN	Informs that the printer occurs an Overrun. The operation is continued by pressing Recover switch. The page formatting should be slightly simplified. It can be canceled in PS mode when the completion of a job.	Press the RECOVER key on the operator panel to release the error display. Simplify page data formatting.
	READY ● ATTENTION ○ ERROR HOST I/F RS232C	Informs that an error occurs in serial I/F. The operation is continued by pressing Recover switch. This is indicated when parity error, framing error, overrun error and so on is detected. The protocol of host and printer should be rechecked.	- Press the RECOVER key on the operator panel to release the error display. - Check the settings of RS232C I/F in the menu. - Replace the interface cable or the Main board (Board-FFF). Note: When replacing the Main board, install the EEPROM mounted in the replaced Main board.
	READY ● ATTENTION ○ FRONT TRAY ERROR PRESS RECOVERKEY	Informs that an error occurs in the home position of front tray. Although the front tray becomes unavailable by pressing Recover switch, the other trays continue operating normally.	Check front tray home sensor.
	READY ● ATTENTION ○ TONER EMPTY REPLACE TNR CART	Promotes by indication that a cartridge should be replaced after a 100-sheet printing since the detection of toner low. It is temporarily reset by opening and closing the cover. This indication will be displayed each 20-sheet printing unless the cartridge is replaced.	Replace the toner cartridge.
	READY ● ATTENTION ○ ERROR PAPER SIZE CHECK tttttt	Paper of improper size was fed from the tray. tttttt: MANUAL, TRAY1, TRAY2, FRONT, FEEDER	Check the paper in the tray or check to see if more than one sheet of copy were fed simultaneously. Open the cover, then close it to perform recovery printing and the error display is released. If this error occurs frequently, see chapter 6.5.2

Category	LCD status message	Trouble or status	Remedy
Daily status	READY ● ATTENTION ○ DUPLEX INPUT JAM REMOVE THE PAPER	Informs that, in feeding papers from tray n to the Duplex unit, a jam occurs in the separator or Duplex unit, by monitoring OUTSNS ON ~ DUP INSNS ON. Tray n : Tray1, Tray2, Tray3, Front Multi Feeder	Remove all of the paper in the printer. Open the cover, then close it to perform recovery printing and the error display is released.
	READY ● ATTENTION ○ DUPLEX FEED JAM1 REMOVE THE PAPER	Informs that, in feeding papers form n tray to the Duplex unit, a jam occurs in the separator or Duplex unit, by monitoring DUP INSNS ON ~ DUP INSNS OFF.	Remove all of the paper in the printer. Open the cover, then close it to perform recovery printing and the error display is released.
	READY ● ATTENTION ○ DUPLEX FEED JAM2 REMOVE THE PAPER	Informs that, in feeding papers from n tray to the Duplex unit, a jam occurs when a paper is reversed to the reverse roller of the Duplex unit, by monitoring MOTOR (Duplex) ON ~ DUP R SNS ON.	Remove all of the paper in the printer. Open the cover, then close it to perform recovery printing and the error display is released.
	READY ● ATTENTION ○ DUPLEX FEED JAM3 REMOVE THE PAPER	Informs that, in feeding papers from n tray to the Duplex unit, a jam occurs when a paper is impinge-fed in the Duplex unit, by monitoring DUP R SNS ON ~ DUP F SNS ON.	Remove all of the paper in the printer. Open the cover, then close it to perform recovery printing and the error display is released.
	READY ● ATTENTION ○ DUPLEX OPEN JAM REMOVE THE PAPER	Jam which occurs in feeding papers to the Duplex when the first tray cassette is pull out in paper-remaining state. Structurally, No first tray cassette will cause no reverse root for papers and open the Duplex cover downwards.	Remove all of the paper in the printer. Open the cover, then close it to perform recovery printing and the error display is released.
	READY ● ATTENTION ○ PAPER INPUT JAM CHECK tttttt	Informs that a jam occurs during paper running after exiting from the tray.	Check the paper in the cassette. Open the cover, then close it to perform recovery printing and the error display is released. If the error ocuurs frequently, see chapter 6.5.2

Category	LCD status message	Trouble or status	Remedy
Daily status	READY ● ATTENTION ○ PAPER FEED JAM CHECK tttttt	Informs that a jam occurs during paper running after exiting from the tray.	Open the cover, remove the paper, then close the cover. When the cover is closed, recovery printing is performed and the error display is released. If the error occurs frequently, see chapter 6.5.2
	READY ● ATTENTION ○ PAPER EXIT JAM REMOVE THE PAPER	Informs that a jam occurs after ejecting a paper. Open the cover and remove the paper inside.	Open the cover, remove the paper, then close the cover, When the cover is closed, recovery printing is performed and the error display is released. If the error occurs frequently, see chapter 6.5.2
	READY ● ATTENTION ○ OKI HSP I/F CARD RESETTING	Informs that OKI HSP I/F card is under reset. It can be automatically restored by stopping the reset.	Warning
	READY ● ATTENTION ○ ERROR HOST I/F OKI HSP XX	Informs that an error (significant malfunction) occurs. The operation is continued by pressing Recover switch. xx: 10 I/F timeout 20 Initial error occurs 10 seconds later since powering on 21 In the event that it takes 3 seconds or more for shifting to the operating mode, or a command for operating mode is received during power on mode. 22 Communication error between OKI HSP-host	Press REWCOVER key. If the error occurs frequently, check HSP card.
	READY ● ATTENTION ○ COVER OPEN	Informs that the upper cover is open.	Close the cover to release toe error display. If the display does not change after the comer is closed, check for correct operation of cover open/switch and lever. Replace the Power Supply Unit (High Voltage).
	READY ● ATTENTION ○ EEPROM RESETTING	Indicates that an error occurs from the results of checking ID No. of EEPROM. The operation is continued by resetting EEPROM to factory default after a-few-second indication.	It displays the message for a few seconds. It reset the EEPROM to the factory default state to continue operation. * When the program ROM is updated and the EEPROM is replaced with new one, the menu factory default corresponding to each destination will be loaded

<table>
<tr><th>Category</th><th>LCD message</th><th>READY LED</th><th>ATTENTION LED</th><th colspan="2">Trouble or status</th><th>Remedy</th></tr>
<tr><td rowspan="11">Controller error</td><td rowspan="11">ERROR CONTROLLER
nn-aaaaaaaa</td><td rowspan="11">Light off</td><td rowspan="11">Flash</td><td colspan="2">A fault occurred in the printer.
Turn the power off, then on to release the error display. If the error display cannot be released by this procedure, call a service person.</td><td></td></tr>
<tr><td>Code (nn)</td><td>Error</td><td>Remedy</td></tr>
<tr><td>10</td><td>An error was detected by program hash check.</td><td>– Replace the program ROM.
(Location: BOARD-FFF: IC6, IC8, IC30, IC31)
– Replace the Main board (BOARD-FFF).

Note: When replacing the Main board, install the EEPROM mounted on the replaced Main board.</td></tr>
<tr><td>20</td><td>An error was detected by font format check.</td><td>– Replace the font ROM.
(Location: BOARD-FFF: IC6, IC8, IC30, IC31)
– Replace the Main board (BOARD-FFF).

Note: When replacing the Main board, install the EEPROM mounted on the replaced Main board.</td></tr>
<tr><td>30</td><td>An error was detected by resident RAM check.</td><td>– Replace the Main board (BOARD-FFF).
Note: When replacing the Main board, install the EEPROM mounted on the replaced Main board.</td></tr>
<tr><td>40</td><td>An error was detected by EEPROM check.</td><td>– Replace the EEPROM. (Location: IC19)
– Replace the Main board (BOARD-FFF).</td></tr>
<tr><td>50</td><td>An error was detected by optional software ROM.</td><td>– Replace the PostScript module (BOARD-MSM or BOARD-FSL).</td></tr>
<tr><td>60</td><td>An error was detected by optional RAM check.</td><td>– Check the optional RAM for proper connection.
– Replace the optional RAM.</td></tr>
<tr><td>70</td><td>A fault occurred in the fan motor.</td><td>– Connect the fan motor cable properly.
– Replace the fan motor.
– Power Supply Unit (AC120V/ 230V)</td></tr>
</table>

Category Controller	LCD message	READY LED	ATTENTION LED	Trouble or status		Remedy
error				Code (nn)	Error	Remedy
				71	A fault occurred in the fuser.	See chapter 6.5.2.
				72	Thermistor open error	
				73	Thermistor short error	
				74	SSIO error	See chapter 6.5.2.
				77	Toner sensor error	Check the operation of the toner sensor lever. Relace the Power Supply Unit (High Voltage) Replace the main board. Note: When replacing the main board, install the EEPROM mounted on the replaced main board.
				80	I/F timeout occurred between the printer main unit and the operator panel.	See chapter 6.5.2.
				81	I/F timeout occurred between the printer main unit and the optional tray (2nd tray, 3rd, multi feeder.)	See chapter 6.5.2.
				83	I/F timeout occurred between the printer and the Duplex Unit	See chapter 6.5.2.
				84	Printing sequence error in the Duplex unit.	See chaspter 6.5.2.
				90	A watchdog timer timeout occurred.	– Turn the power off, then on. – Replace the Main board. (BOARD-FFF) Note: When replacing the Main board, install the EEPROM mounted on the replaced Main board
				F0	Monitor error (double weight)	
				F1	Monitor error (argument error)	
				F2	Optional timeout error	
				F3	Optional status error	
				F4	BG program error	
				F5	System timer program error	
				F6	IPT2 program error	
				F7	IPT1 program error	

<table>
<tr><th>Category</th><th>LCD message</th><th>READY LED</th><th>ATTENTION LED</th><th colspan="2">Trouble or status</th><th>Remedy</th></tr>
<tr><td>Proccesor error</td><td>ERROR CONTROLLER
nn-aaaaaaaa</td><td>Light off</td><td>Flash</td><td colspan="2">An error occurred in the controller.
n = (*1) Exception Code aaaaaaaa = Error address

*1:
<table><tr><th>Exception code</th><th>Error</th></tr><tr><td>1~3
D~F</td><td>Reserved</td></tr><tr><td>4</td><td>Address Error Exception
(Lead instruction, instruction fetch)</td></tr><tr><td>5</td><td>Address Error Exception (Store instruction)</td></tr><tr><td>6</td><td>Bus Error Exception (Instruction Fetch)</td></tr><tr><td>7</td><td>Bus Error Exception
(Load instruction, store instruction)</td></tr><tr><td>8</td><td>System Call Exception</td></tr><tr><td>9</td><td>Breakpoint Exception</td></tr><tr><td>A</td><td>Reserved Instruction Exception</td></tr><tr><td>B</td><td>Coprocessor Unusable Exception</td></tr><tr><td>C</td><td>Arithmetic Overflow Exception</td></tr><tr><td></td><td></td></tr></table></td><td>– Turn the power off, then on.

– Replace the Main board. (BOARD-FFF)

Note: When replacing the Main board, install the EEPROM mounted on the replaced Main board.</td></tr>
</table>

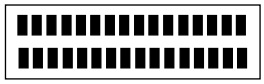
6.5.2 LCD message troubleshooting

If troubles are not correctable from the LCD message trouble list, follow the troubleshooting flowcharts given here to deal with them.

No.	Trouble	Flowchart number
1.	The printer does not work normally after being turned on.	①
2.	Jam error ├ Paper input jam (1st Tray) ├ Paper input jam (Front feeder) ├ Paper feed jam └ Paper exit jam	 ②-1 ②-2 ②-3 ②-4
3.	Paper size error	③
4.	Fusing unit error (ERROR71, ERROR72, ERROR73)	④
5.	SSIO (Synchronous Serial I/O) error (between the Main board and the Power Supply Unit (High voltage)) (ERROR74)	⑪
6.	I/F time-out between the printer and the operator panel (ERROR80)	⑦
7.	I/F time-out (no response) between the printer and an optional tray (2nd tray, 3rd tray, multi feeder) (ERROR81)	⑤
8.	Messages cannot be received through the parallel interface.	⑧
9.	Messages cannot be received through the serial interface.	⑨
10.	Data cannot be received through the OKI HSP interface.	⑩
11.	I/F time-out between the printer and the Duplex unit. Printing sequence error in the Duplex. (ERROR83, ERROR84)	⑥

Note: When replacing the Main board, install the EEPROM from the old Main board, onto the new Main board.

① The printer does not work normally after being turned on.

- Is  message shown in the LCD display (for less than 1 second)?
  - No Is the AC cable connected properly?
    - No Connect the cable properly.
  - No Is the message (16 columns ■ display only on the top row) shown in the LCD display?
    - Yes Replace the Main board.
  - No Are the following voltages applied to the corresponding pins of the POWER connector on the Main board? (For the measuring points, see Figure 6-1.)

    Pin 23: –8V, Pin 24: +8V, Pins 19, 20: +30V
    Pins 9-12, 17, 18: 0V, Pins 13, 14: +5V
    - No Remove the AC cable. Set the POW switch to the ON position. Measure the resistance between L and N pins of the AC inlet using a multimeter. Is there continuity between L and N pins (normal resistance: 554 kΩ)? (For measuring points, see Figure 6-2.)
      - No Replace the fuse F2 or the Power Supply Unit (AC120V or 230V)
    - Yes Are POWER connector of the Main board and Connection cord-Wire (26 pin) connected properly?
      Are connection cord-wire and CN3 connector of the Power Supply Unit (AC120V or 230V) connected properly?
      - No Connect the connectors properly.
    - Yes Are the following voltages applied to CN3 connector of the Power Supply Unit (AC120V or 230V)? (For measuring points, see Figure 6-3.)

      Pins 19, 20: +30V, Pins 9-12, 17, 18: 0V
      Pin 23: –8V, Pins 13, 14: +5V, Pin 24: +8V
      - No Replace the Power Supply Unit (AC120V or 230V).
    - Yes Replace the Connection cord-wire (26 pin).
    - Is the printer recovered?
      - No Replace the Main board
    - YES END

①-1

①-2

From ①-2 on the preceding page

①-1

Yes Is the operator panel connected to the Main board properly?

- No Connect the operator panel properly.

Yes Is the connecting cord defective?

- Yes Replace the connecting cord.

No Replace the operator panel assembly.

Is the printer recovered?

- No Replace the Main board.

YES END

Yes Is INITIALIZING message shown in the LCD display?

- No Replace the Main board.

YES ONLINE .XXX
XXXX XXXX message shown in the LCD display?

- No Take the proper action following the message shown in the LCD display.
  (For details, see the Chapter 6.5.1 LCD STATUS message/trouble list.)

YES END

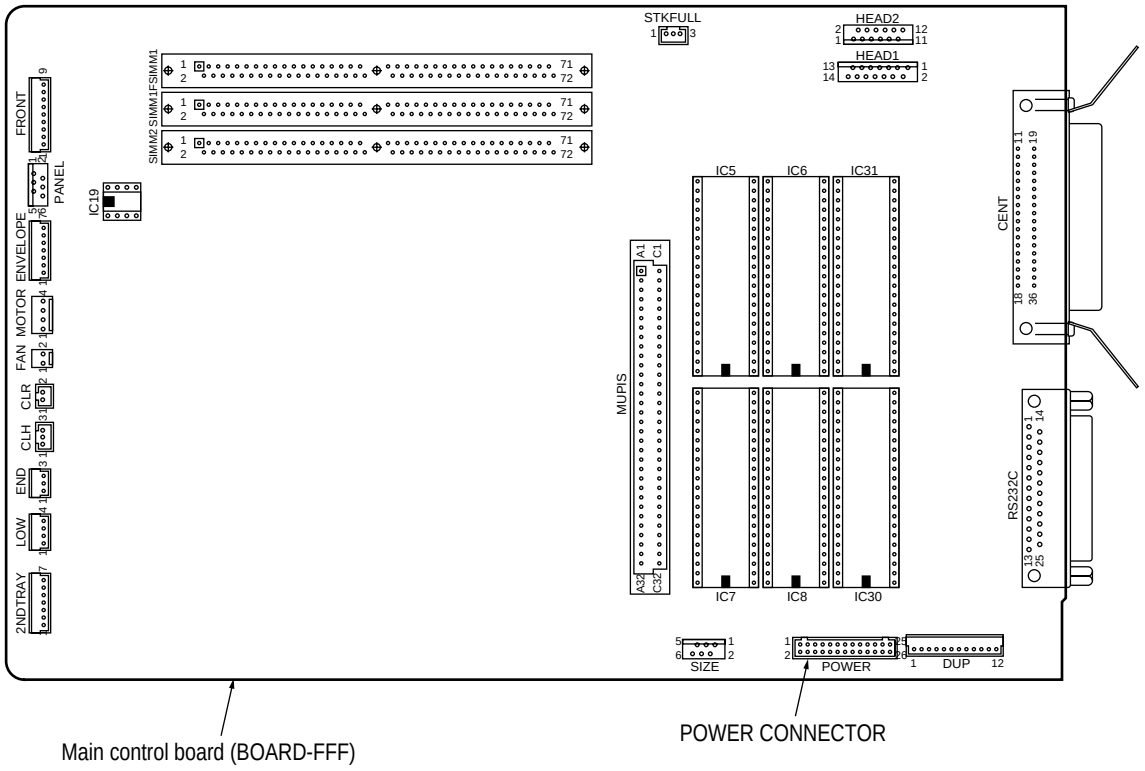


Figure 6-1 Connector and Pin Location

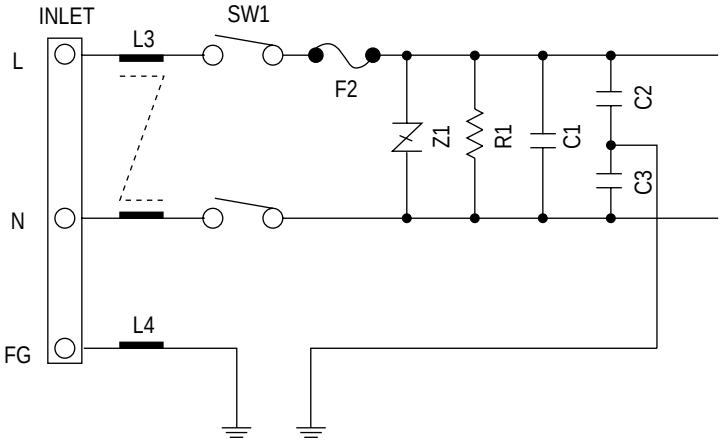


Figure 6-2 Measurement by a Multimeter

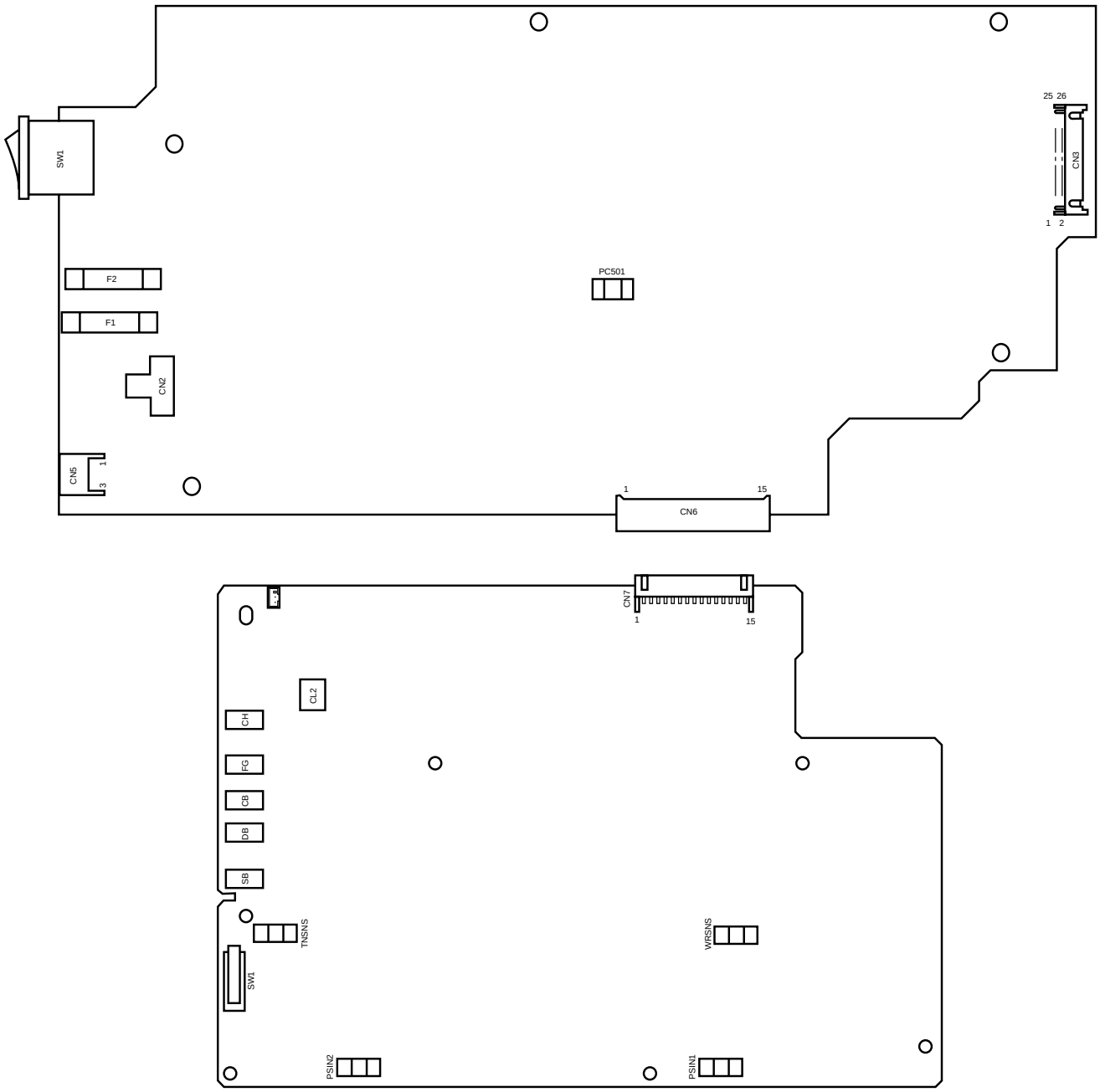


Figure 6-3 Connector and Pin Location

[JAM error]

②-1 Paper input jam (1st tray)

- Does a jam error occur when the power is turned on?
  - Yes Is the paper at the inlet sensor lever?
    - Yes Remove the paper.
    - No Does the inlet sensor lever operate smoothly?
      - No Replace the inlet sensor lever
      - Yes Clean the inlet sensor 1 on the Power Supply Unit (High Voltage) or replace the Power Supply Unit (High Voltage). (See Figure 2.3 Sensor Layout Diagram.)
  - No Does jam eror occur after paper feeding?
  - Yes Is the paper fed on the inlet sensor lever?
    - Yes Does the inlet sensor lever operate smoothly?
      - No Replace the inlet sensor lever.
    - Yes Clean the inlet sensor 1 on the Power Supply Unit (High Voltage) or replace the Power Supply Unit (High Voltage). (See Figure 2.3 Sensor Layout Diagram.)
  - No Replace the hopping roller assembly or paper cassette assembly.
- No Is the hopping roller rotating?
  - Yes Set the paper cassette properly.
  - No Is the hopping motor rotating?

Ⓐ

  - Yes GEAR ASSY-CLUTCH (Z50) turned ON ?
    - No Is a cable and connector securely connected between GEAR ASSY-CLUTCH and MAIN BOARD ?
      - No Connect the cable firmly. Is the printer recoverd?
        - YES END
      - No Replace the GEAR ASSY-CLUTCH (Z50).
    - Yes Replace the Frame Assy-Hopping.
  - No Are the cable and connector between the hopping motor and the Main board connected properly? (see Chapter 7.1.)
    - No Connect each connector properly or replace the nylon connector cord (white: 9 pins).
    - Yes Is the coil resistance (normal resistance: about 6.7 Ω) of the hopping motor normal?
      - No Replace the hopping motor.
      - Yes Replace the Main board.

②-2 Paper input jam (front feeder)

- Does jam error occur when the power is turned on?
  - Yes Is the paper at the inlet sensor lever?
    - Yes Remove the paper.
    - Ⓐ No Does the inlet sensor lever operate smoothly?
    - No Replace the inlet sensor lever.
    - Yes Clean the inlet sensor 1 on the Power Supply Unit (High Voltage) or replace the Power Supply Unit (High Voltage). (See Figure 2-3 Sensor Layout Diagram.)
  - No Does a jam error occur after paper feeding?
  - Yes Is the paper fed on the inlet sensor lever?
    - Yes Go to Ⓐ.
  - No Go to Ⓑ.
- No Does the front feeder paper sensor lever operate smoothly?
  - No Replace the lever of the front feeder paper sensor.
  - Yes Clean the front feeder paper sensor.
  - Is the printer recovered?
  - YES END
  - No Replace the front feeder paper sensor assembly.
- Ⓑ No Is the hopping roller rotating?
  - Yes Set the paper properly.
  - No Is the hopping motor rotating?
  - Yes Replace the front feeder gear or idle gear.

② **-1-** Ⓐ

②-3 Paper feed jam

- Does a paper feed jam occur when the power is turned on?
  - Yes Is the paper on the paper sensor lever?
    - Yes Remove the paper.
    - No Does the paper sensor lever operate smoothly?
    - No Replace the paper sensor lever.
    - Yes Clean the paper sensor. (See Figure 2-3 Sensor Layout Diagram.)
    - Is the printer recovered?
    - No Replace the Power Supply Unit (High Voltage).
    - YES END
  - No Has the paper reached the paper sensor lever?
  - No Is the Drum motor rotating?
    - No Go to on the next page Ⓒ.
    - Yes Is the cluch for register roller (N0.44 in Figure 8-2) turned on ?
      - No Is a cable from the clutch connected to "CLR" connector on the main board ?
      - Yes Replace the Clutch.
      - Is the printer recovered?
      - No Replace the Main board.
      - YES END

  Go to on the next page Ⓐ.

Go to on the next page Ⓑ.

From on the preceding page Ⓐ.

From on the preceding page Ⓑ.

Yes Is the image drum set properly?

- No Set the image drum properly.

Yes In case of paper feed from the front feeder, check the hopping roller of the front feeder assembly. In case of paper feed from the tray, check the hopping roller assembly and the tray.

No Has the paper reached the outlet sensor lever?

- Yes Does the outlet sensor lever operate smoothly?

  - No Replace the outlet sensor lever.

  Yes Clean the outlet sensor on the Power Supply Unit (AC120V or 230V). (See Figure 2-3 Sensor Layout Diagram.)

  Is the printer recovered?

  No Replace the Power Supply Unit (AC120V or 230V).

  YES END

No Ⓒ Is the drum motor rotating?

- No Is there any defective gear in the motor bracket assembly?

  - Yes Replace the defective gear.

  No Are the connections for "Motor" connector on the Main board between drum motor, properly? (See Chapter 7.1)

  - No Connect these connectors properly.

  No Is the coil resistance (normal resistance between pins 1 and 2, between pins 3 and 4 : 3.1 Ω) of the drum motor normal?

  - No Replace the drum motor.

  Is the printer recovered?

  - No Replace the Main board.

  YES END

Go to on the next page Ⓐ.

From on the preceding page Ⓐ.

No Is the transfer roller rotating smoothly?

- No Is there any defective gear of the transfer roller?
  - Yes Replace the defective gear.
- No Replace the transfer roller.

No Is the fuser unit installed properly?

- No Install the fuser unit properly.

No Is the image drum cartridge set properly?

- No Set the image drum cartridge properly.

No Does the paper sensor lever operate smoothly?

- No Replace the paper sensor lever.
- Yes Clean the paper sensor on the Power Supply Unit (High Voltage). (See Figure 2-3 Sensor Layout Diagram.)

Is the printer recovered?

- No Replace the Power Supply Unit (High Voltage).
- YES END

②-4 Paper exit jam

- Does a paper exit jam error occur when the power is turned on?

  - YES Is the paper on the outlet sensor lever?

    - Yes Remove the paper
    - No Does the outlet sensor lever operate smoothly?
    - No Replace the outlet sensor lever.
    - Yes Clean the outlet sensor on the Power Supply Unit (AC120V or 230V). (See Figure 2-3 Sensor Layout Diagram.)
    - Is the printer recovered?
    - No Replace the Power Supply Unit (AC120V or 230V).
    - YES END

  - No Is the face-up stacker drawn out or pushed into the printer completely?
  - No Draw the face-up stacker out the printer completely or push it into the printer completely.
  - Yes Is the eject roller assembly installed properly?
  - No Install the eject roller assembly properly.
  - Yes Replace the eject roller assembly.

③ Paper size error

- Is paper of the specified size used?
  - No Use paper of the specified size.
  - Yes Do the inlet sensor lever and paper width sensor lever operate smoothly?
    - No Replace the inlet sensor lever or paper width sensor lever.
    - Is the printer recovered?
      - No Clean the inlet sensor 1 or paper width sensor on the Power Supply Unit (High Voltage). (See Figure 2-3 Sensor Layout Diagram.)
      - Is the printer recovered?
        - No Replace the Power Supply Unit (High Voltage).
      - YES END
    - YES END
    - YES Does the outlet sensor lever operate smoothly.
      - No Replace the outlet sensor lever.
      - Is the printer recovered?
        - No Clean the outlet sensor on the Power Supply Unit (AC120V or 230V). (See Figure 2-3 Sensor Layout Diagram.)
        - Is the printer recovered?
          - No Replace the Power Supply Unit (AC120V or 230V).
        - YES END
      - YES END
      - Yes Clean the inlet sensor 1, inlet sensor 2, and outlet sensor. (See Figure 2-3 Sensor Layout Diagram.)
      - Is the printer recovered?.
        - No Replace the Power Supply Unit (High Voltage).
        - YES END

④ Fuser unit error (ERROR 71), (ERROR 72), (ERROR 73)

- Turn the power OFF/ON.
- Does a fuser unit error occur immediately?
  - Yes Is the thermistor open or shorted?
    Measure the resistance between thermistor contacts.
    (About 220 kΩ at room temperature, 25°C)
    (See Chapter 7.3 for the measuring points.)
    - Yes Replace the fuser unit.
    - Ⓐ No Is a cable of the thermistor connected to "CN8" connector on the Power Supply Unit (High Voltage)?
      Is there any flaw on the cable of the thermistor ?
    - No Adjust the thermistor contact so as to touch the contact assembly properly.
  - Yes Does appear the heat-on signal at pin 6 (HEAT ON signal: 0 V in heater on state) of the POWER connector on the Main board?
    - No Replace the Main board.
  - Yes Replace the Power Supply Unit (High Voltage).
  - No Does a fuser unit error occur after more than 120 seconds from the power-on?
    - No Go to Ⓐ.
  - Yes Turn the power OFF/ON.
- Is the heater of the fuser unit turned on? (When the heater is turned on, heat is radiated.)
  - Ⓑ
    - Yes Is a cable of the thermistor connected to "CN8" connector on the Power Supply Unit (High Voltage)?
    - No Is a cable of the heater connected to "CN2" connector on "Power Supply Unit" (120V or 230V)

To on the next page Ⓑ.

To on the next page Ⓐ.

From on the preceding page Ⓐ.

From on the preceding page Ⓑ.

- Yes Replace the fuser unit.
- Is the printer recovered?
  - No Replace the Main board.
- YES END

No Is the heater or thermistor open?
Measure the resistance between the thermistor contacts, and between heater contacts (normal resistance: 220 kΩ (25°C) between pins 1 and 2, 1.5 Ω (120 V) and 5.8 Ω (240 V) between pins 3 and 4) (See Chapter 7.3.)

- Yes Replace the fuser unit.

No Is the AC voltage applied to the CN2 connector on the Power Supply Unit (AC120V or 230V)? (See Figure 6-3)

- No Is CN2 connector connected to the Power Supply Unit (AC120V or 230V)?
  - No Connect the CN2 connector to the Power Supply Unit (AC120V or 230V) properly.
- Yes Is Pin 6 (HEAT ON signal) of the POWER connector of the Main board turned on? (In heater on state, this pin is set to 0 V).
  - No Replace the Main board.
- Yes Replace the Power Supply Unit (High Voltage).

YES Go to Ⓑ.

⑤ I/F time-out between printer and optional tray (ERROR 81) .

- Is an optional tray (2nd / 3rd tray or envelope feeder) used?
  - Yes Is the connection between the Main board and the optional tray connected properly. (See Chapter 7.1.)
    - No Connect the cable properly.
  - Yes Replace the Main board.
  - Is the printer recovered?
    - No Isolate the trouble by following the 2nd/ 3rd tray or multi feeder maintenance manual. (See Appendix D or E.)
  - YES END
- No Replace the Main board.

⑥ I/F time-out between printer and Duplex Unit (ERROR 83)

- Is an Duplex Unit used?
  - Yes Is the connection between the Main board and the Duplex Unit connected properly. (See Chapter 7.1.)
    - No Connect the cable properly.
  - Yes Replace the Main board.
  - Is the printer recovered?
    - No Isolate the trouble by following the Duplex Unit maintenance manual. (See appendix C.)
  - YES END
- No Replace the Main board.

⑦ I/F time-out occurs between the printer and the operator panel (ERROR 80) .

- Is the connecting cord of the operator panel connected to the PANEL connector of the Main board properly? (See Chapter 7.1.)
  - No Connect the connecting cord of the operating panel to the PANEL connector of the Main board properly.
  - Yes Is the connecting cord defective?
  - Yes Replace the connecting cord.
  - No Replace the operator panel assembly.
  - Is the printer recovered?
  - No Replace the Main board.
  - YES END

⑧ Message cannot be received through the parallel interface.

- Is the parallel I/F ENABLE in "HOST I/F" item of Menu 1.

  No — Set the Parallel I/F to "ENABLE".

  Yes — Is the host set to the bidirectional communication?

  Yes — Set the parallel I/F to the bidirectional communication enable state (DISABLE → ENABLE) in menu level 2.

  No — Set the parallel I/F to the bidirectional communication disable state (ENABLE → DISABLE) in menu level 2.

  Is the printer recovered?

  YES — END

  No — Is the connector of the parallel interface cable connected to the printer properly?

  No — Connect the connector of the parallel interface cable to the printer properly.

  Yes — Is there any defect in the cable (broken or bent pin, broken wire)?

  Yes — Replace the parallel interface cable.

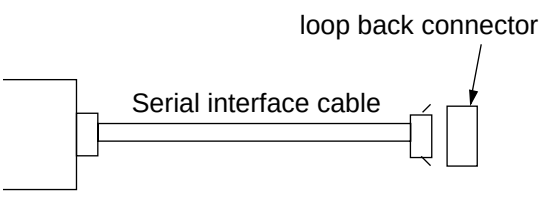
  No — Replace the Main board or ask the user to check the hardware and software at the host side.

⑨ Message cannot be received through the serial interface.

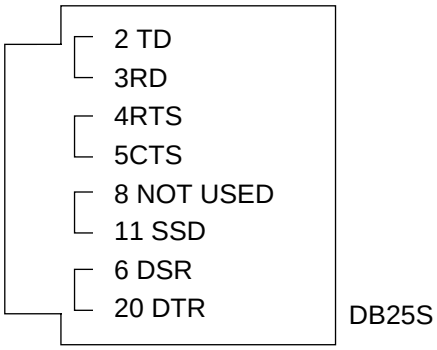
- Is message ERROR HOST I/F displayed ?
  - Yes Set the RS 232C I/F ENABLE in "HOST I/F" items of Menu 1.
    - No Set the RS 232C I/F to "ENABLE".
  - No Do the following items selected for RS232C SERIAL in menu level 2 coincide with those selected at the host side ?

    • FLOW CONTROL • PARITY
    • BAUD RATE • MIN. BUSY
    • DATA BITS

  - No If the selection differs between the printer and the host, change the setting of the above items in menu level 2 so as to coincide with the setting at the host side.
  - Yes Is the connector of the serial interface cable connected to the printer properly ?
  - No Connect the connector printer properly.
  - Yes Is there any defect in the serial interface cable(broken or bent pin, broken wire) ?
  - Yes Replace the serial interface cable.
  - No Perform the loop back test using the loop test function in the system maintenance mode. (To make this test, it is necessary to form the following loop back connector. Connect the loop back connector to port instead of connecting the host.)
  - Is LOOP TEST ERROR displayed ?
  - No Replace the serial interface cable.
  - Is the printer recovered ?
    - YES END
  - No Replace the Main board.
  - Yes Replace the Main board or ask the user to check the hardware and software at the host side.



Connection method



Test connector connecting drawing

⑩ Data cannot be received through the OKI HSP interface

- Is the interface board (option) connected to the OKI HSP interface connector on the Main board properly?

  - No Connect the interface board (option) to the OKI HSP interface connector properly.
  - Yes Is there any broken or bent pin in the interface board (option)?

  - Yes Ask the user to replace the interface board (option).
  - No Replace the Main board.
  - OK?

  - No A trouble may exist in the interface board (option), interface cable or host side. Ask the user to check these items.

⑪ Synchronous serial I/O error (ERROR 74)

- Are POWER connector of the Main board and Connection cord-wire (Figure 8-2 No 21) properly?
  Are Connection cord-wire (Figure8-2 No.21) and CN3 connector of the Power Supply Unit (AC120V or 230V) connected properly?

  - No Connect the connectors properly.
  - Yes Is there any flaw or breake ?

  - Yes Replace the connection cord-wire.
  - Yes Replace the Main board.
  - Is the printer recovered?

  - No Replace the Power Supply Unit (High Voltage).
  - YES END

6.5.3 Image troubleshooting

Procedures for troubleshooting if abnormal images have been printed out are explained below. Figure 6-3 below shows typical abnormal images.

Trouble	Flowchart number
Images are light or blurred as a whole (Figure 6-4, Ⓐ)	①
Dark background density (Figure 6-4, Ⓑ)	②
Blank paper is output (Figure 6-4, Ⓒ)	③
Black belts stripes in the vertical direction (Figure 6-4, Ⓓ)	④
Cyclical defect (Figure 6-4, Ⓔ)	⑤
Print voids	⑥
Poor fusing (images are blurred or peeled off when touched by hands)	⑦
White belts streaks in the vertical direction (Figure 6-4, Ⓕ)	⑧
Snowy print of high density pattern (Figure 6-4, Ⓗ)	⑨
Blockly faded print (Figrue 6-4, Ⓘ)	⑩

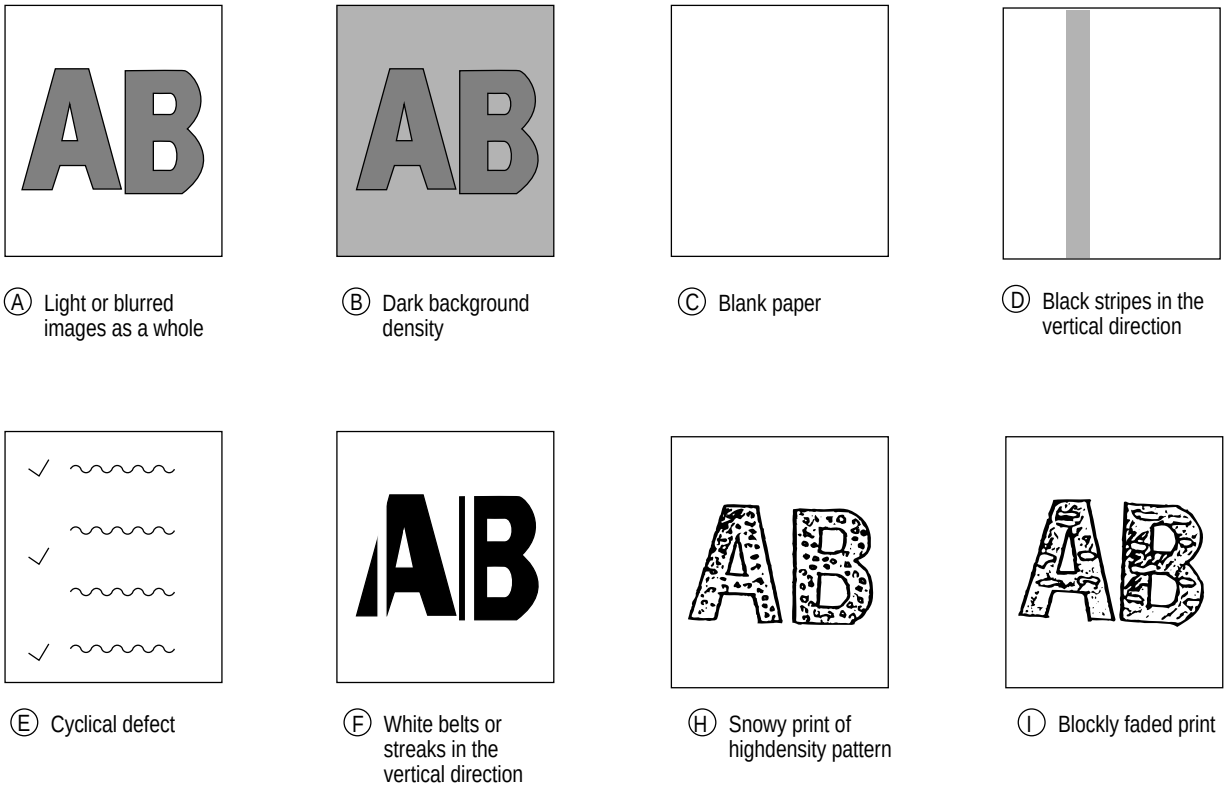

Ⓐ Light or blurred images as a whole
Ⓑ Dark background density
Ⓒ Blank paper
Ⓓ Black stripes in the vertical direction
Ⓔ Cyclical defect
Ⓕ White belts or streaks in the vertical direction
Ⓗ Snowy print of highdensity pattern
Ⓘ Blockly faded print

Figure 6-4 Abnormal images

① Image are light or blurred a whole.

- Is toner low? (Is the TONER LOW message displayed?)
  - Yes Supply toner.

No Is paper of the specified grade used?
  - No Use paper of the specified grade.

Yes Is the lens surface of the LED head dirty?
  - Yes Clean the lens.

No Is the LED head installed properly? (Check connector HEAD1 (14P), HEAD2 (12P) of the Main board and PC connector on the LED head for proper connection.)
  - No Install the LED head properly.

Yes Is the contact plate of the transfer roller contacted with the contact assembly of the Power Supply Unit (High Voltage) properly? (See Figure 6-6.)
  - No Make the contact plate of the transfer roller contact with the Power Supply Unit (High Voltage) and Shaft of the transfer roller properly.

Yes Are the contact of the developing roller and the contact of the toner supply roller of the image drum cartridge contacted with the contact assembly properly? (See Figure 6-5 Ⓐ and Ⓑ.)
  - No Adjust the contacts of the developing and toner supply roller to contact the contact assembly properly.

Yes Replace the transfer roller. (See 3.3.36.)

Has the trouble been removed?
  - YES END

No Replace the image drum cartridge.

Has the trouble been removed?
  - YES END

    Note: After replacing the image drum cartridge, set the printer in the user maintenance mode by turning the power on while pressing the MENU key and reset the drum counter. (Refer to User's Manual.)

No Replace the Main board or Power Supply Unit (High Voltage).

② Dark background density

- Has the image drum been exposed to external light?
  - Yes Mount the image drum in the printer and wait for about 30 minutes.

No Is the heat roller of the fusing unit dirty?
  - Yes Clean the heat roller.

No Is the contact of the cleaning roller of the image drum cartridge contacted with e contact assembly properly? (See Figure 6-5 Ⓒ.)
  - No Adjust the contact of the cleaning roller to contact the contact assembly properly.

Yes Replace the image drum cartridge.

Has the trouble been removed?
  - YES END

Note: After replacing the image drum cartridge, set the printer in the user maintenance mode by turning the power on while pressing the MENU key, and reset the drum counter. (Refer to User's Manual.)

No Replace the Main board or Power Supply Unit (High Voltage).

③ Black paper is output.

- Is the LED head connected properly? (Check connector HEAD1 (14P), HEAD2 (12p) on the Main board and PC connector on the LED head.)
  - No Connect the LED head properly or replace the head cable.

Yes Is the contact of the image drum cartridge contacted with the ground contact properly. (See Figure 6-5 Ⓓ.)
  - No Check the ground contact of the image drum cartridge.

Yes Check the connectors HEAD1 (14P) and HEAD2 (12P)
  - No Replace the LED head.

Yes Replace the connector

Has the trouble been removed.
  - YES END

Note: After replacing the LED head, set the printer in the engine maintenance mode by turning the power on while pressing the FORM FEED and ENTER keys. Set the LED head drive time. (Refer to Section 4.2.)

No Replace the Main board or Power Supply Unit (High Voltage).

④ Black belts or stripes in the vertical direction

- Replace the image drum cartridge.
- Has the trouble been removed?
  - YES END

    Note: After replacing the image drum cartridge, set the printer in the user maintenance mode by turning the power on while pressing the MENU key, and reset the drum counter, (Refer to User's Manual.)
- No Replace the LED head.
- Has the trouble been removed.
  - YES END

    Note: After replacing the LED head, set the printer in the engine maintenance mode by burning the power on while pressing the FORM FEED and ENTER keys. Set the LED head drive time. (Refer to Section 4.2.)
- No Replace the Main board or Power Supply Unit (High Voltage).

⑤ Cyclic error

	Frequency	Remedy
Image drum	3.71" (94.2 mm)	Replace or clean the image drum cartridge.
Developing roller	2.05" (52.1 mm)	Replace the image drum cartridge.
Toner supply roller	3.24" (82.24 mm)	Replace the image drum cartridge.
Charging roller	1.37" (34.7 mm)	Replace the image drum cartridge.
Cleaning roller	1.17" (29.8 mm)	Replace the image drum cartridge.
Transfer roller	2.28" (58 mm)	Replace the transfer roller.
Heat roller	3.46" (88 mm)	Replace the fusing unit assy.
Back-up roller	3.46" (88 mm)	Replace the back-up roller.

Notes:

1. After replacing the image drum cartridge, set the printer in the user maintenance mode by turning the power on while pressing the MENU key, and reset the drum counter. (Refer to User's Manual.)

2 After replacing the fusing unit assy, set the printer in the engine maintenance mode by turning the power on while pressing the FORM FEED and ENTER keys, and reset the fuser counter. (Refer to See 4.1.)

⑥ Print voids

- Is the contact plate of the transfer roller contacted with the Power Supply Unit (High Voltage) properly? (See Figure 6-5.)
  - No Adjust the contact plate contact to contact the Power Supply Unit (High Voltage) properly and the shaft of the transfer roller.

Yes Replace the transfer roller. (See 3.3.36.)

Has the trouble been removed.

- YES END

No Are the contacts of the toner supply roller, developing roller, image drum and charging roller contacted with the contact assy properly? (See Figure 6-5 Ⓐ, Ⓑ, Ⓒ, Ⓓ, Ⓔ.)

- No Adjust the contacts to contact the contact assy properly.

Yes Replace the image drum cartridge.

Has the trouble been removed?

- YES END

Note: After replacing the image drum cartridge, set the printer in the user maintenance mode by turning the power on while pressing the MENU key, and reset the drum counter. (Refer to User's Manual.)

No Is the LED head installed properly? (Check connector HEAD1(14p), HEAD2 (12p) on the Main board and PC Connector on the LED head.)

- No Install the LED head properly.

Yes Replace the LED head or the head cable.

Has the trouble been removed?

YES END

Note: After replacing the LED head, set the printer in the engine maintenance mode by turning the power on while pressing the FORM FEED and ENTER keys. Set the LED head drive time. (Refer to Section 4.2.)

No Replace the Main board or Power Supply Unit (High Voltage).

⑦ Poor fusing

- Is paper of the specified grade used?
  - No Use paper of the specified grade.

Yes

- Is the spring of the back-up roller normal?
  - No Replace the spring.

Yes

- Is the contact of the fusing unit assy contacted with the contact assy properly?
  - No Adjust the contact of the fusing unit assy to contact the contact assembly properly.

Yes

- Replace the fusing unit assy.
- Has the trouble been removed?
  - YES END

No

- Replace the Main board or Power Supply Unit (High Voltage).

⑧ White belts or streaks in the vertical direction

- Are the LED lens dirty?
  - Yes Clean the LED lens.

No Is the contact plate of the transfer roller contacted with the Power Supply Unit (High Voltage) properly? (See Figure 6-6.)

- No Make the contact plate contact with the Power Supply Unit (High Voltage) properly.

Yes Replace the transfer roller. (See 3.3.36.)

Has the trouble been removed?

- YES END

No Is the LED head installed properly? (Check connector HEAD1 (14p), HEAD2 (12p) on the Main board and PC connector on the LED head.)

- No Install the LED head properly.

Yes Replace the LED head.

Has the trouble been removed?

- YES END

Note: After replacing the LED head, set the printer in the engine maintenance mode by turning the power on while pressing the FORM FEED and ENTER keys. Set the LED head drive time. (Refer to Section 4.2.)

Yes Replace the image drum cartridge.

Has the trouble been removed?

- YES END

Note: After replacing the image drum cartridge, set the printer in the user maintenance mode by turning the power on while pressing the MENU key. Reset the drum counter. (Refer to User's Manual.)

No Replace the Main board or Power Supply Unit (High Voltage).

⑨ Snowy print of high density pattern

- Is toner low?
  - Yes Supply toner.
- No Is paper of the specified grade used?
  - No Use paper of the specified grade.
- Yes Is the lens of the LED head dirty?
  - Yes Clear the lens.
- No Is the LED head installed properly?
  - No Install the LED head properly.
- Yes Increase the printer setting number (±0 →+1) (Refer to User's manual.)

⑩ Blockly faded print

- Is toner low?
  - Yes Supply toner.
- No Is paper of the specified grade used?
  - No Use paper of the specified grade.
- Yes Is the lens of the LED head dirty?
  - Yes Clear the lens.
- No Is the LED head installed properly?
  - No Install the LED head properly.
- Yes Decrease the printer setting number (±0 →–1) (Refer to User's manual.)

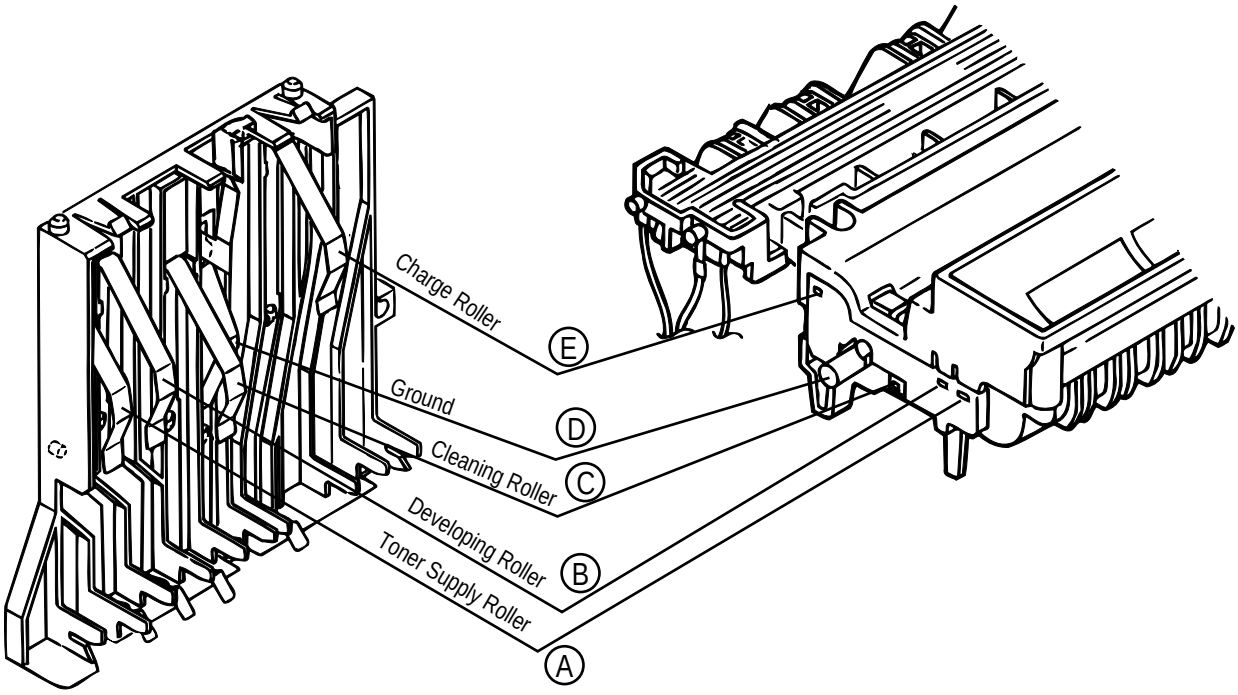

Charge Roller
E
Ground
D
Cleaning Roller
C
Developing Roller
B
Toner Supply Roller
A

Figure 6-5

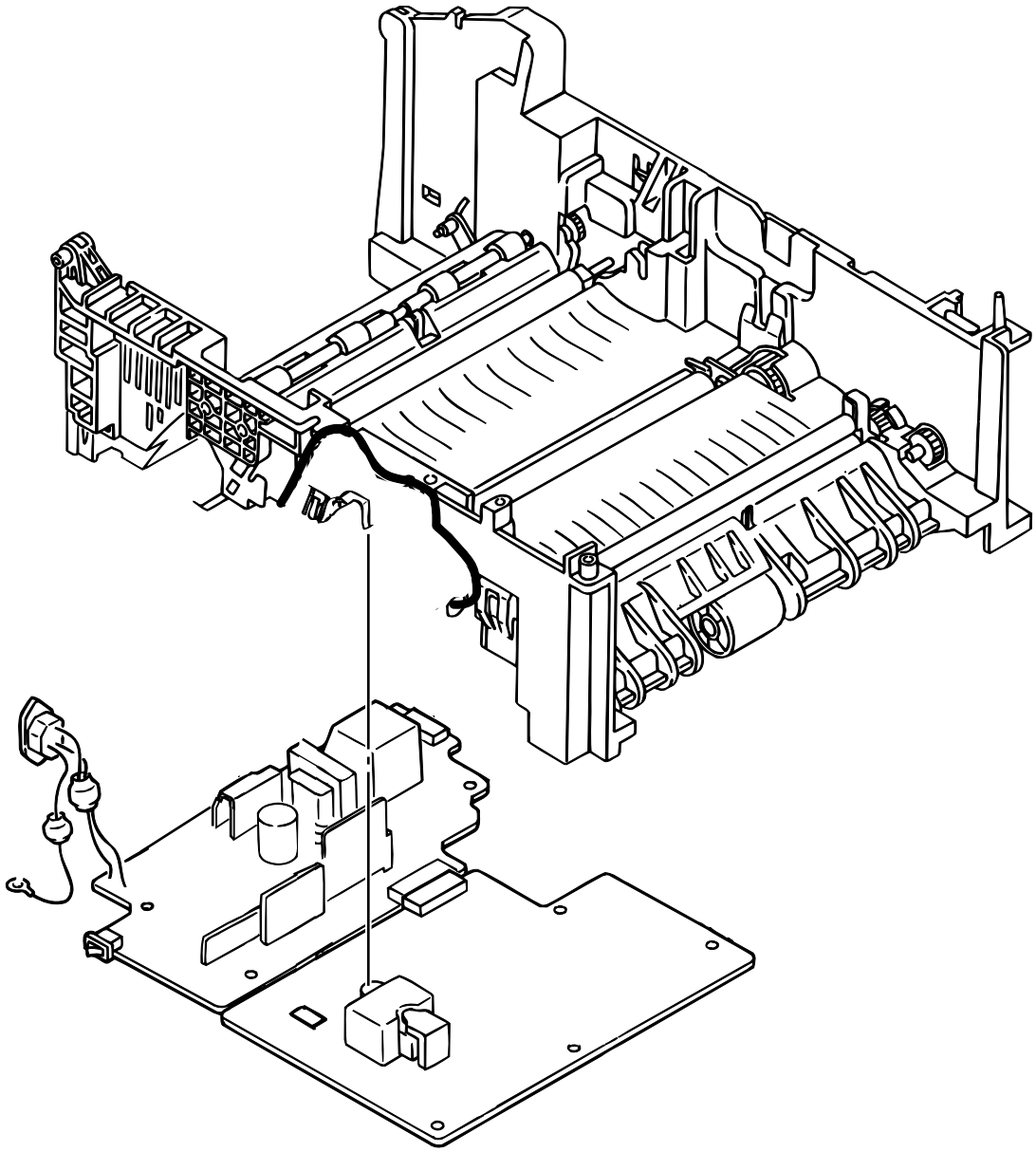
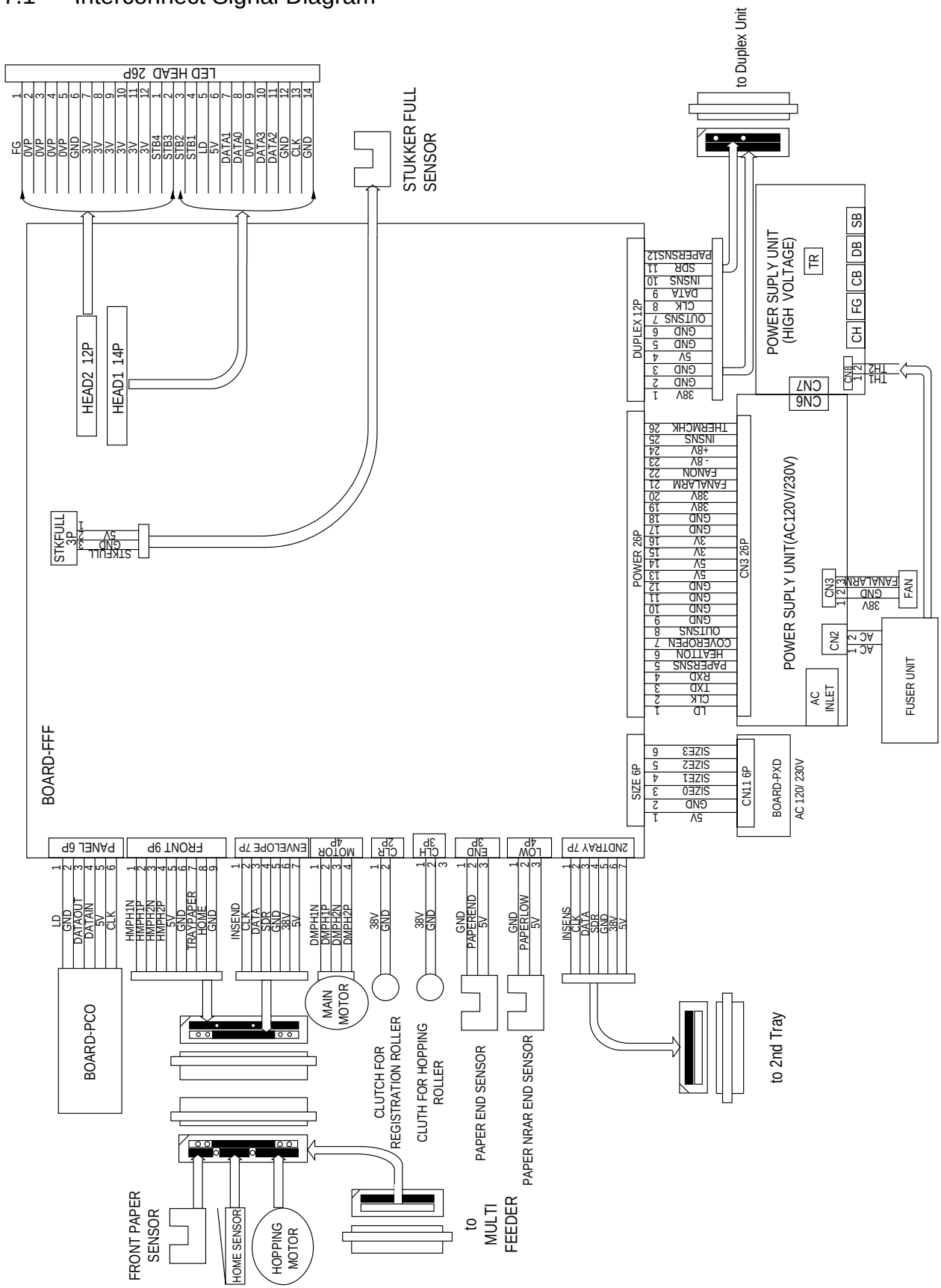


Figure 6-6

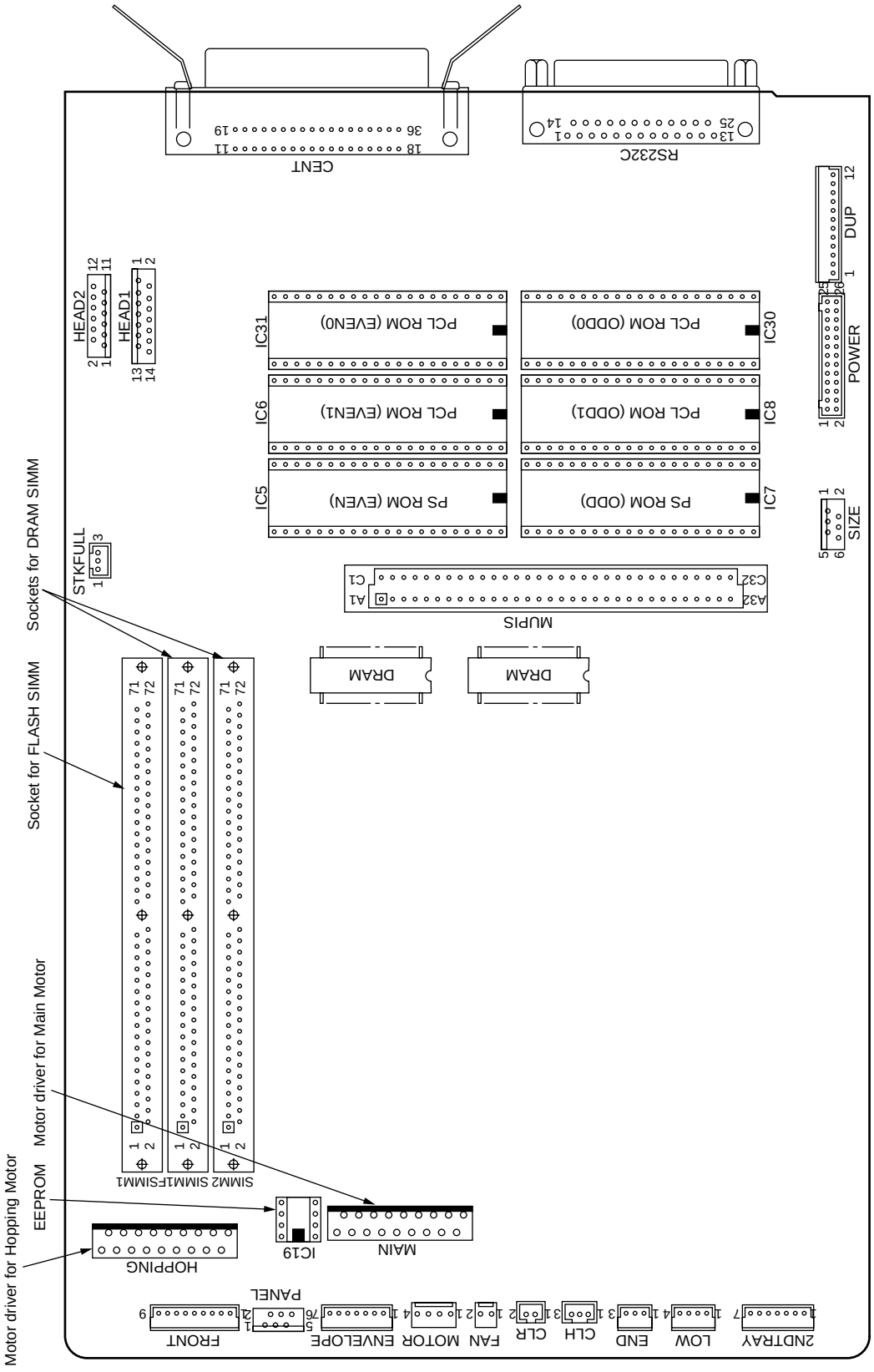
7. WIRING DIAGRAM

7.1 Interconnect Signal Diagram

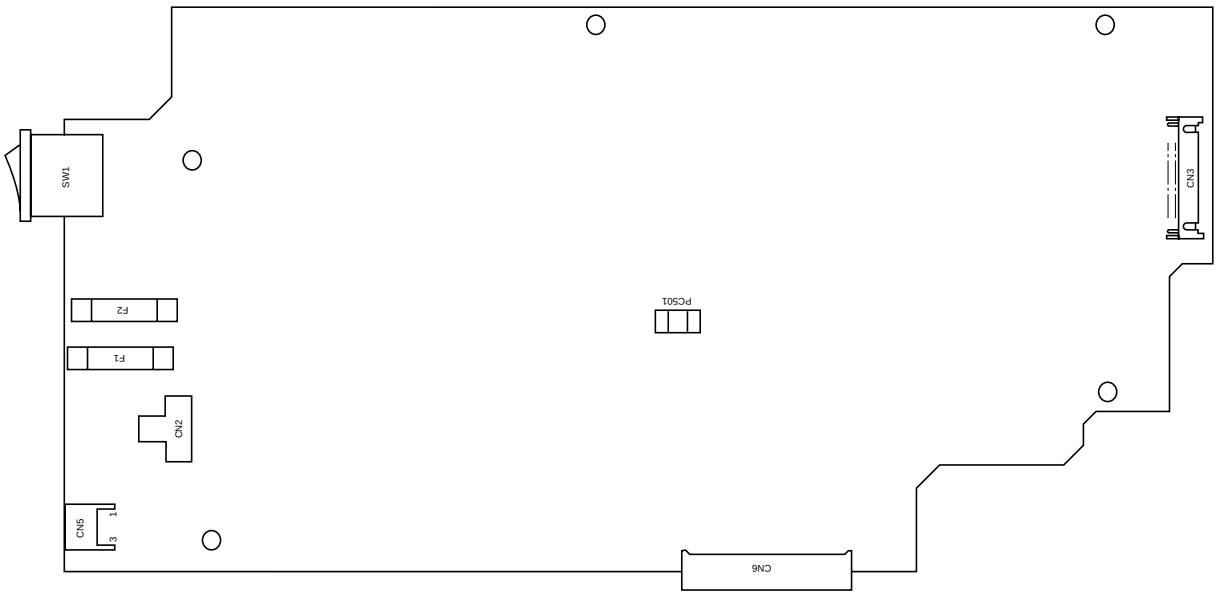


7.2 PCB Layout

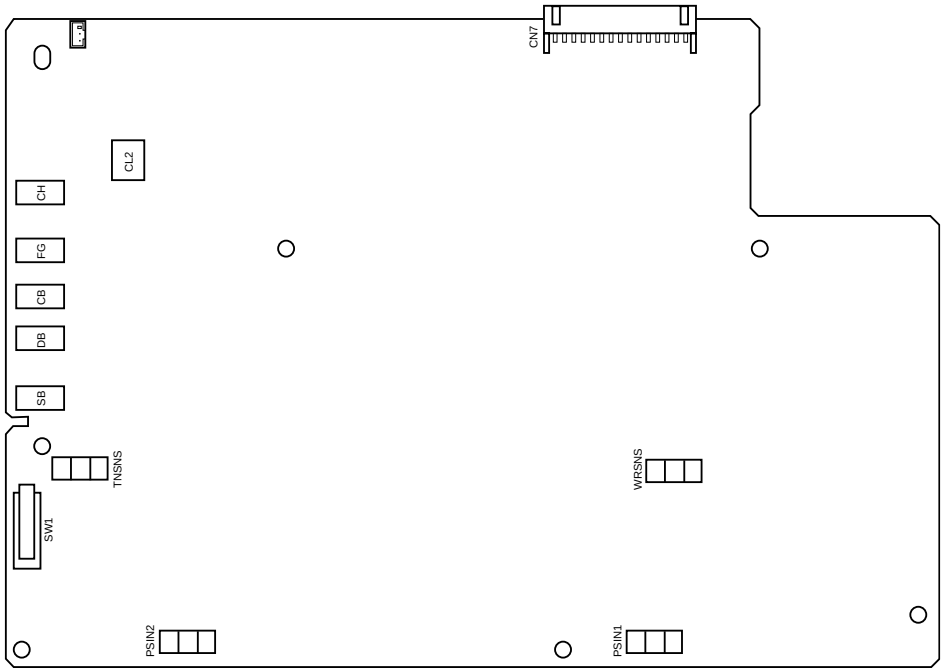
(1) Main board (BOARD-FFF)



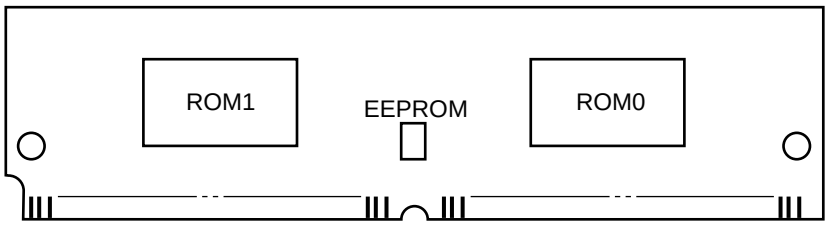
(2) Power supply board (AC120V/230V)



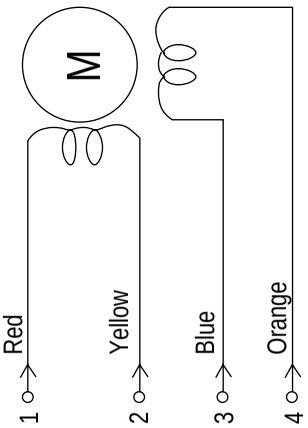
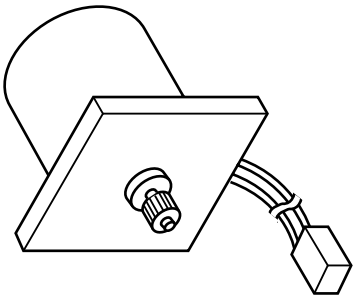
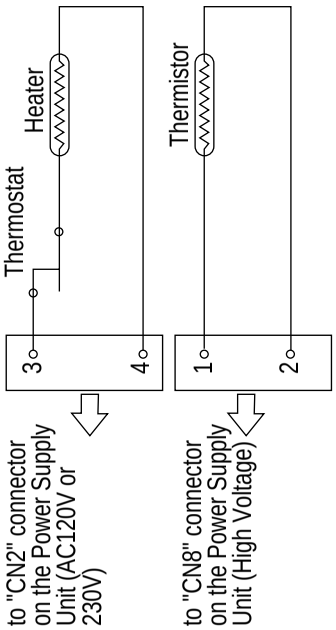
(3) Power supply board (High voltage)

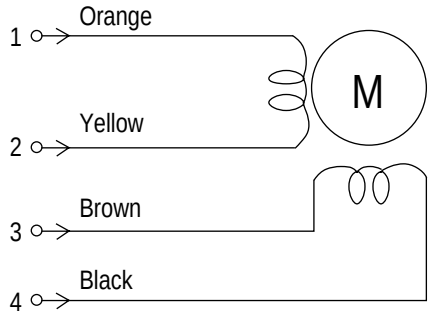
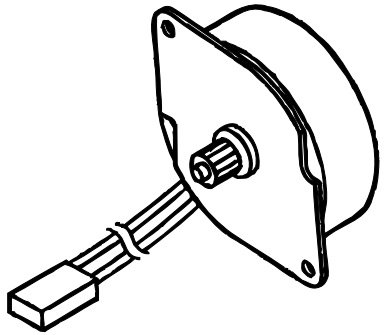
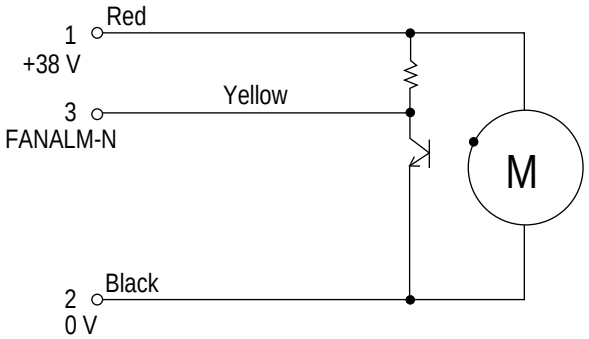
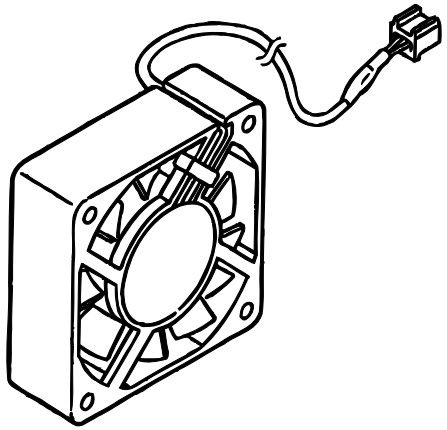


(4) Flash ROM module (BOARD-FSL or BOARD-FSL-2)



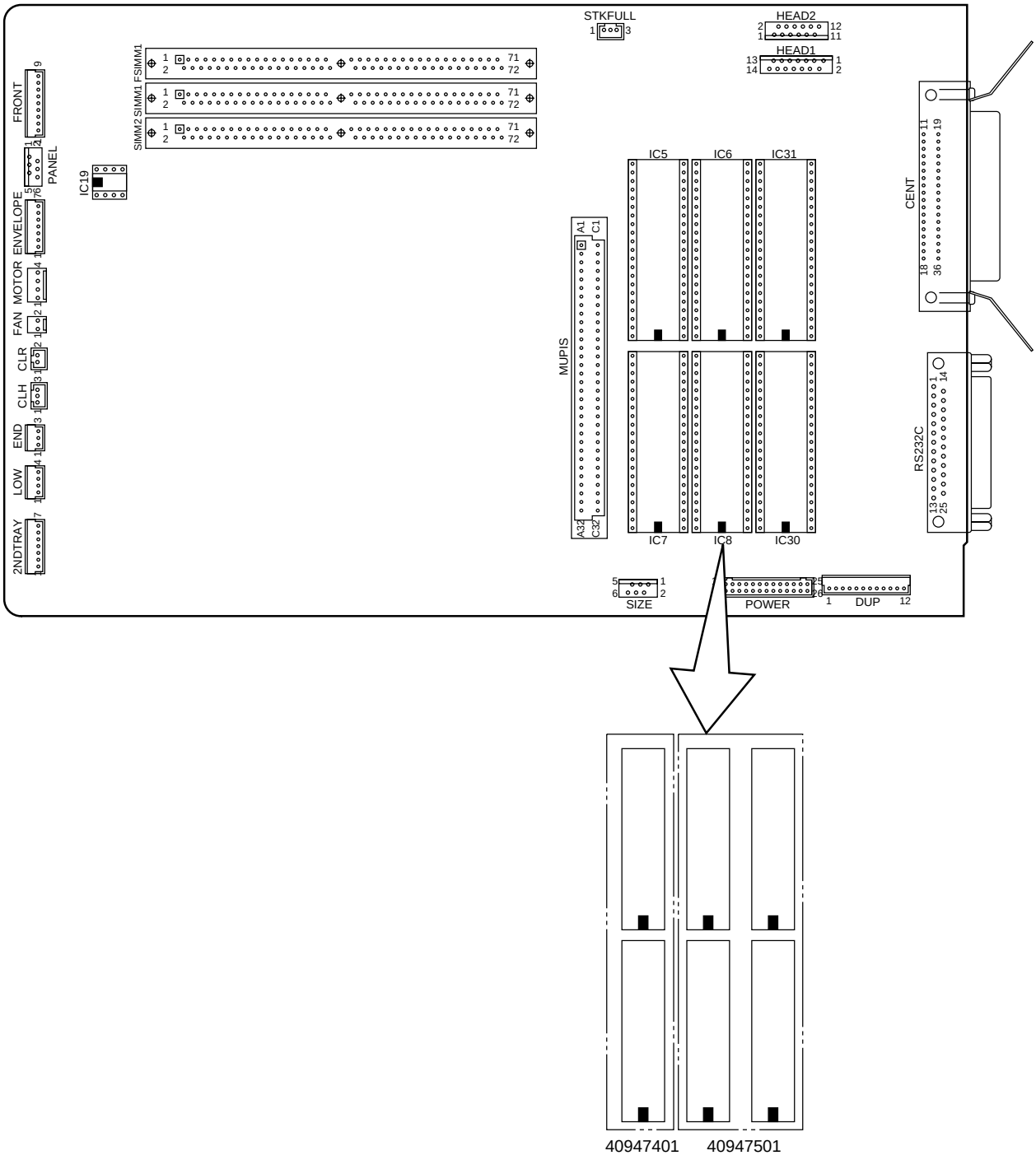
7.3 Resistance Check

Unit	Circuit Diagram	Illustration	Resistance
Motor-Main			Between pins 1 and 2: 3.1Ω Between pins 3 and 4: 3.1Ω
Fusing Unit			Between pins 1 and 2: 220kΩ (at 25°C) Between pins 3 and 4: 1.5Ω (120V) 5.8Ω (240V)

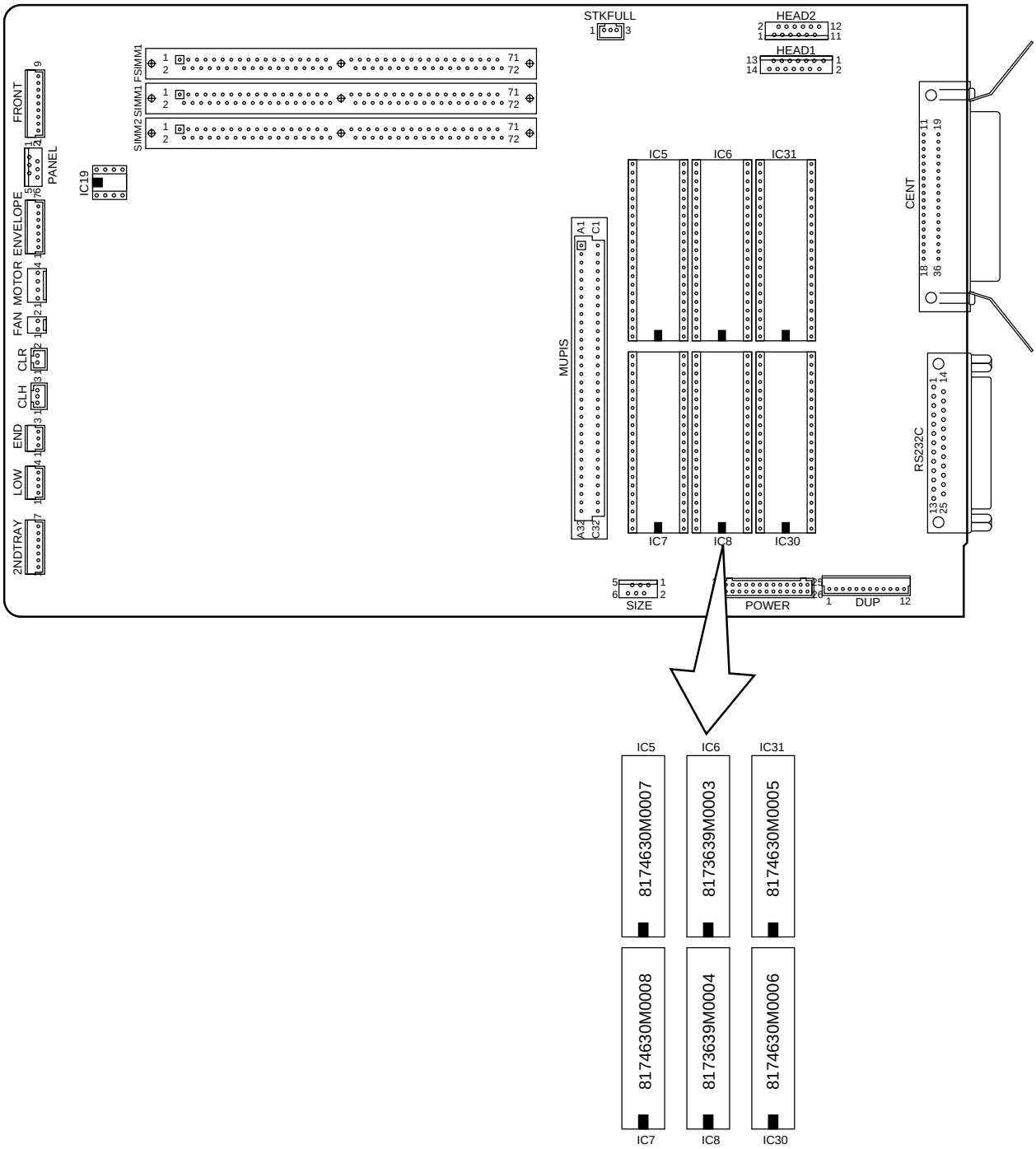
Unit	Circuit Diagram	Illustration	Resistance
Hopping motor			Between pins 1 and 2: 6.7Ω Between pins 3 and 4: 6.7Ω
Fan			

7.4 Program/Font ROM Location

(1) In case of EP ROM or OTP ROM



(2) In case of MASK ROM



8. PARTS LIST

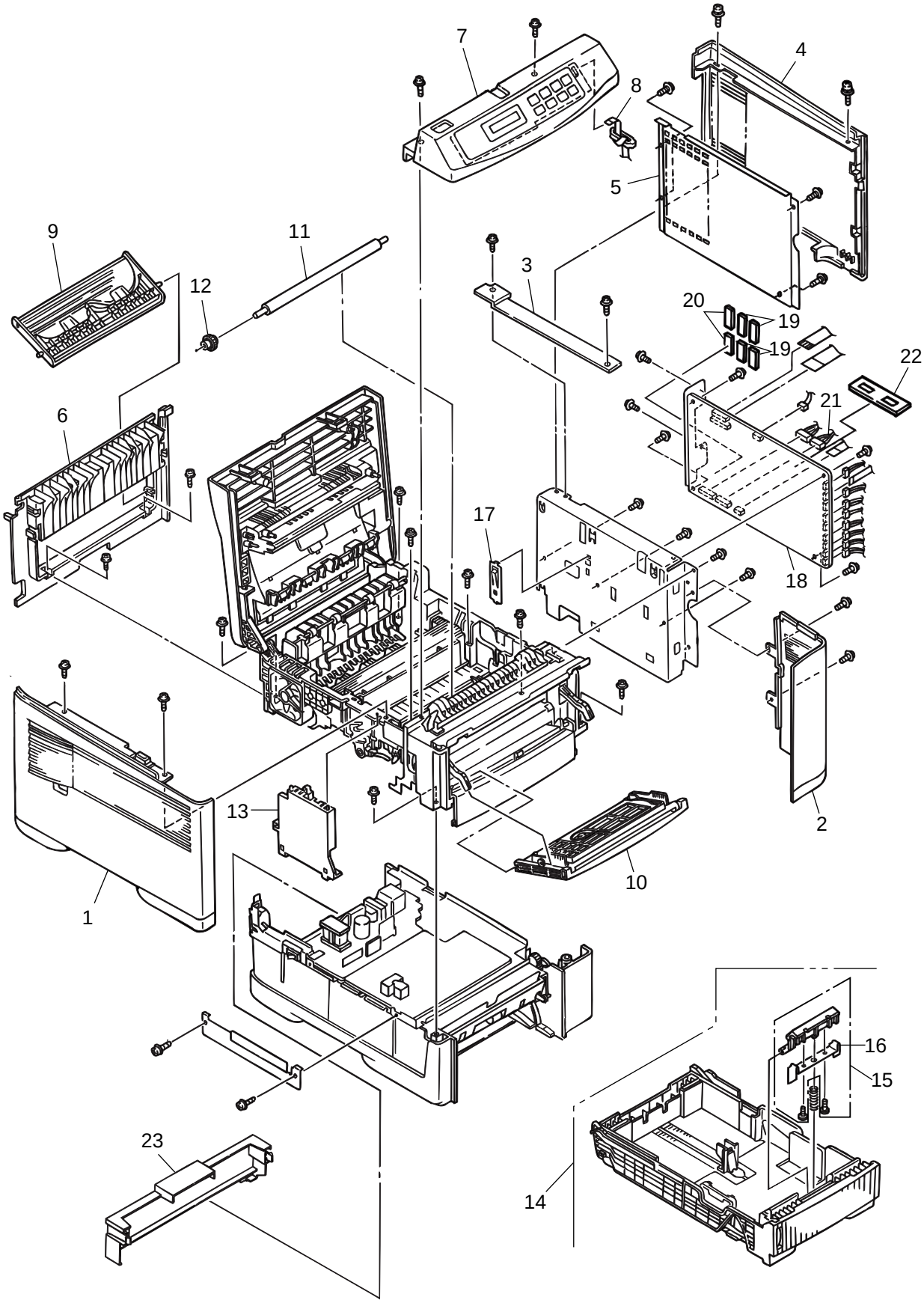


Figure 8-1 Printer Unit

Table 8-1 Printer Unit

No.	Parts No.	Name	Q'ty/U	Reccomended Q'ty			Remarks
				50	100	1000	
1	40441001	Cover-Side(L) Ass.	1	0	1	2	
2	40304101	Cover-Side(R)	1	0	1	2	
3	40304401	Cover-Frame	1	0	1	2	
4	40304301	Cover-Side(I/F)	1	0	1	2	
5	40323401	Plate-Shield	1	1	3	6	
6	40304001	Cover-Rear	1	0	1	2	
7	40304508	Frame-OP panel Ass. (ODA)	1	0	1	2	#
	40304503	Frame-OP Panel Ass. (OEL)	1	0	1	3	
	40304509	Frame-OP panel Ass. (INT)	1	0	1	2	#
8	2381002P0007	SMCD6X280BDX10(BL)	1	2	5	10	
9	2PA4128-1074G001	Face-up Stacker Assy	1	0	1	3	
10	40441301	Manual Feed Assy	1	1	3	9	
11	40027002	ROLLER-Transfer	1	1	3	22	
12	4PP4076-5042P001	TR Gear	1	1	2	3	
13	40378001	Contact Assy	1	1	3	7	
14	40378401	CASE Assy.-Cassette	1	1	3	12	
15	40927901	Frame Assy.-Separation	1	1	3	12	
16	40496001	PLATE-Damper	1	0	1	12	
17	4PP4076-5067P001	Earth Plate BK (R)	1	0	3	6	
18	40946904	Board-FFF	1	2	5	10	# Without ROM
19	40947401	PROM-Control (PS)	1	1	3	6	#
20	40947501	PROM-Control (PCL)	1	1	3	6	#
21	40295701	Connection Cord Wire (power supply)	1	0	3	6	
22	40405419	Board-FSL	1	1	2	10	# Flash ROM module (4MB)
	40405420	Board-FSL-2	1	1	2	10	# Flash ROM module (8MB)
23	40462501	COVER-Blind	1	1	3	6	

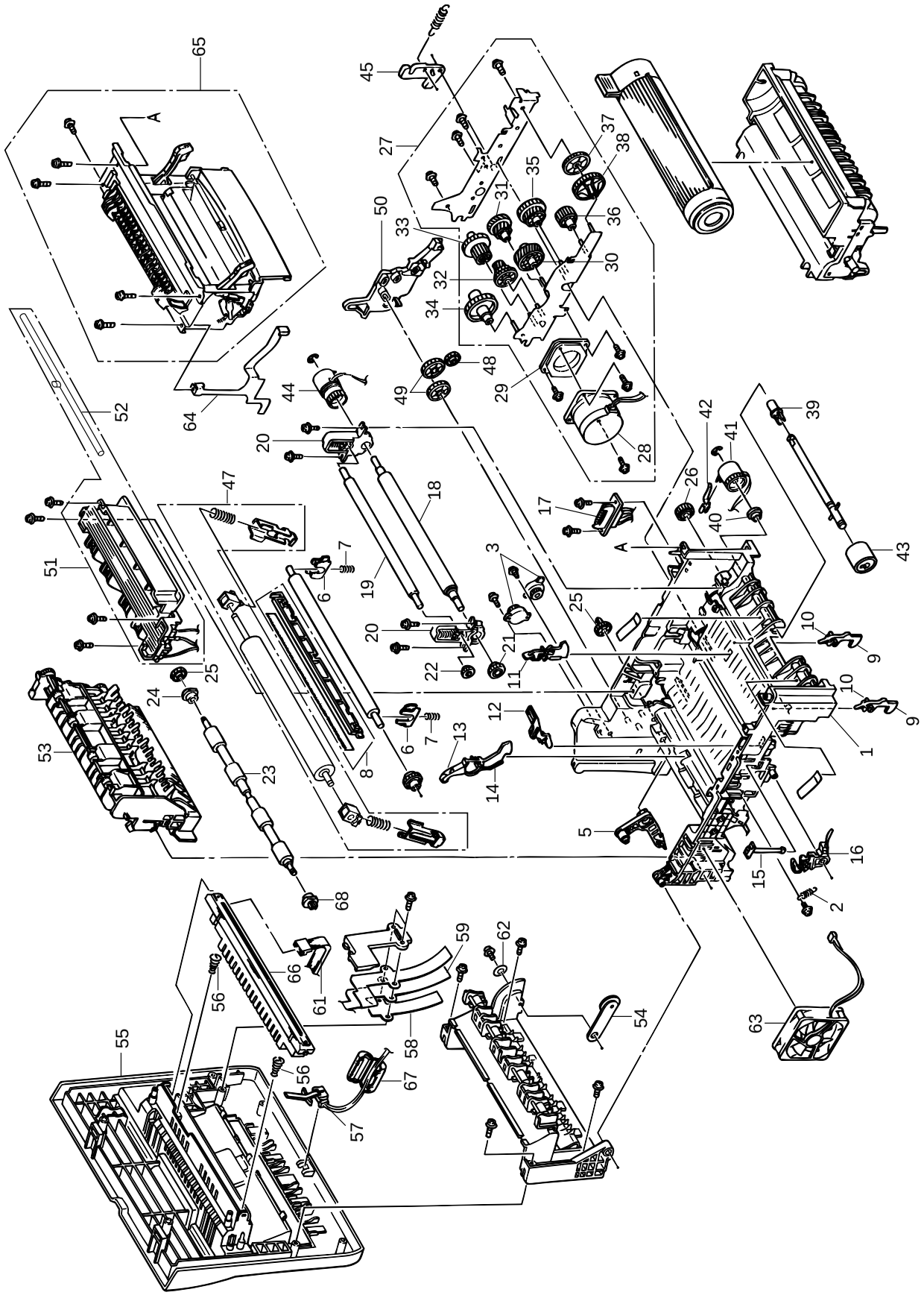


Figure 8-2 Frame-Main Unit

Table 8-2 Frame-Main Unit (1/2)

No.	Parts No.	Name	Q'ty/U	Reccomended Q'ty			Remarks
				50	100	1000	
1	40596901	FRAME Assy-Main	1	1	2	3	
2	4LB-192600-6	Spring(TSP3.3/0.35-16.2*33.9/230G)	1	0	2	4	
3	4PB4083-6197P001	Damper	2	1	2	3	
4							
5	40315801	LEVER-Separator	1	1	3	6	
6	4PP4076-5035P001	TR Bearing	2	1	3	5	
7	4PP4076-5039P001	TR Spring R	2	1	3	5	
8	40299701	GUIDE ASS.-Discharge	1	1	3	6	
9	40032901	Sensor-In	2	0	1	3	
10	40033001	Spring-In Sensor	2	0	1	3	
11	3PP4076-5082P001	Write Sensor Lever	1	0	3	5	
12	4PP4076-5086G001	Toner Sensor Lever (Adhesive)	1	0	1	3	
13	40583801	LEVER Assy.-Out sensor	1	0	1	2	
14	40324001	SPRING-Out Sensor	1	0	1	2	
15	4PP4076-5047P001	EP Lock Shaft	1	0	0	1	
16	4PA4076-5048G001	EP Rock Lever L Assy	1	0	1	2	
17	40597001	Cord Ass.-Front	1	0	1	2	
18	40301601	ROLLER-Regist	1	1	2	3	
19	40301701	ROLLER-Pressure	1	1	2	3	
20	40614401	Bearing Assy.-Registration	2	1	2	3	
21	40301801	GEAR-Regist	1	1	2	3	
22	40301901	GEAR-Pressure	1	1	2	3	
23	40323901	ROLLER-Feed (C)	1	1	3	6	
24	4PP4076-3949P001	Bush	1	1	3	6	
25	40316301	GEAR-Roller (C)	1	0	3	6	
26	40302401	GEAR-Idle K	1	0	1	2	
27	40298201	Motor Ass.-Main	1	0	3	6	
28	40298301	MOTOR-Main	1	0	1	2	
29	40298801	PLATE-Damper	1	1	3	6	
30	40332901	GEAR-Idle A	1	0	1	2	
31	40320301	GEAR-Idle B	1	0	1	2	
32	40299201	GEAR-Idle C	1	0	1	2	
33	40302201	GEAR-Idle D	1	0	1	2	
34	40299301	GEAR-Idle E	1	0	1	2	
35	40299401	GEAR-Idle F	1	0	1	2	

Table 8-2 Frame-Main Unit (2/2)

No.	Parts No.	Name	Q'ty/U	Reccomended Q'ty			Remarks
				50	100	1000	
36	40299501	GEAR-Idle G	1	0	1	2	
37	40299601	GEAR-Idle H	1	0	1	2	
38	40302301	GEAR-Idle J	1	0	1	2	
39	40313501	BEARING-Plastic (Feed)	1	0	3	6	
40	4PP4076-5308P001	Bearing	1	0	3	6	
41	40371501	GEAR Assy.-Clutch (Z50)	1	1	3	6	
42	40432301	PLATE-FG (1st)	1	0	3	6	
43	40313201	ROLLER Ass.-Feed	1	2	4	8	
44	40371601	GEAR Assy.-Clutch (Z40)	1	1	3	6	
45	4PP4076-5044P001	EP Rock Lever R	1	0	3	6	
46	4PP4076-5045P001	EP Lock Spring	1	0	3	6	
47	40301001	ROLLER Assy.-BK	1	1	2	3	
48	40316101	GEAR-Idle (EA)	1	0	1	2	
49	40316201	GEAR-Idle (EB)	2	0	1	2	
50	40302501	LEVER-Back up release	1	0	1	2	
51	40929101	HEAT-Assy (A4 120V)	1	2	10	20	ODA(120V)
	40929102	HEAT-Assy (A4 230V)	1	2	10	20	ODA(230V)/OEL/INT
52	40306401	LAMP-Halogen 750W 120V	1	2	5	10	ODA(120V)
	40306402	LAMP-Halogen 750W 230V	1	2	5	10	ODA(230V)/OEL/INT
53	40307401	GUIDE Assy.-Eject	1	1	3	6	
54	4PP4076-5191G001	Damper Arm (Caulking)	1	0	1	2	
55	40587001	Stacker Assy (For Maintenance)	1	0	1	2	
56	4PP4128-1164P001	HEAD Spring	2	0	3	15	
57	40365401	SENSOR-Stack Full	1	0	1	2	
58	40409201	Film-Guide	1	0	0	1	
59	40409301	Film-FG	1	0	0	1	
60	2PP4128-1096P001	Cable Cover	1	0	0	1	
61	40450501	HEAD Cable Assy	1	0	1	3	
62	4PP4076-5009P001	Washer	1	0	1	2	
63	3PB4076-5290P001	DC Fan Motor (92)	1	1	2	3	
64	40307201	PLATE-FG (F)	1	0	0	1	
65	40443301	Feeder Unit-FRONT	1	0	1	3	
66	40547201	LED-HEAD	1	1	2	3	
67	105A1046C1001	ZCAT1325-0530A R CORE	1	1	3	6	
68	4PP4043-4489P001	Bearing	1	1	3	6	

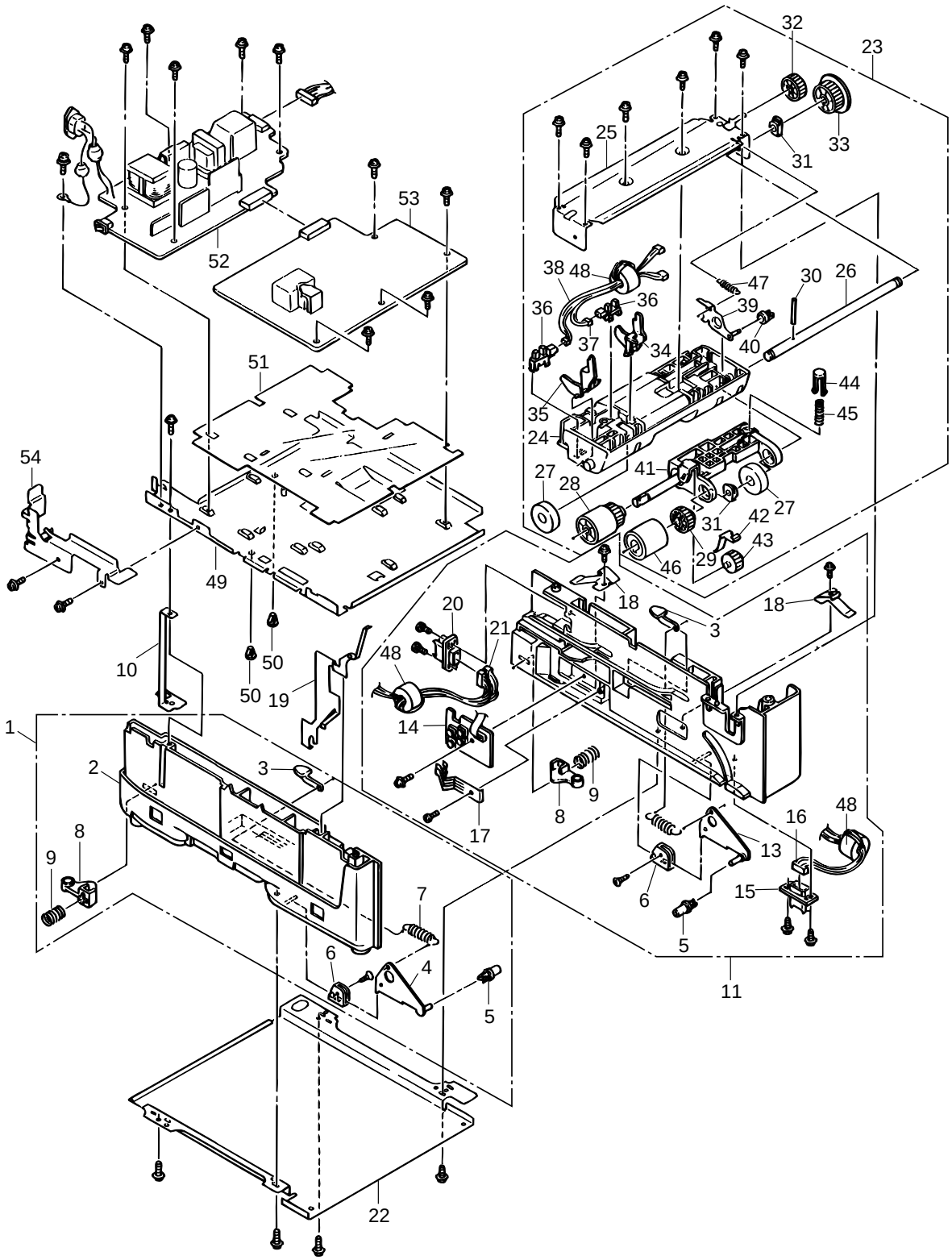


Figure 8-3 Base Unit

Table 8-3 Base Unit (1/2)

No.	Parts No.	Name	Q'ty/U	Reccomended Q'ty			Remarks
				50	100	1000	
1	40377601	GUIDE Assy.-Cassette(L)	1	0	1	2	
2	40597101	GUIDE-Cassette (L)	1	1	3	6	For Maintenance
3	4PP4122-1217P001	Pull Block	2	1	2	3	
4	40349102	Lever-Link (Caulking)	1	1	3	6	
5	40349701	ROLLER-Link	2	2	6	12	
6	4PP4076-5358P001	Link Support	2	0	0	1	
7	40928101	Spring-Sheet	2	0	1	3	#
8	4PP4076-5359P001	Cassette Stopper	2	0	1	3	
9	4PP4043-4526P001	Pressure Coil Spring	2	0	0	1	
10	40445601	Earth Plate L	1	1	3	6	
11	40377701	GUIDE Assy.-Cassette(R)	1	0	1	2	
12	40597201	GUIDE-Cassette (R)	1	1	3	6	For Maintenance
13	40349101	Lever-Link (Caulking)	1	1	3	6	
14	40368302	Board PXC-2	1	0	1	2	
15	2201000P0140	Connector (IMSA-9714N-14A)	1	0	1	2	
16	4YS4011-4448P003	Nylon Connector Cord	1	0	1	2	To 2nd Tray
17	4PP4076-5360P001	Detector Spring	1	0	1	2	
18	40389801	PLATE-Earth (Bottom)	2	2	6	12	
19	40518501	PLATE-Earth (Link)	1	1	3	6	
20	2201000P0141	Connector (IMSA-9714N-14B)	1	0	1	2	
21	40375001	Connection Code-Wire	1	0	1	2	To Duplex
22	40989101	PLATE Assy.-Bottom	1	0	3	6	
23	40377801	FRAME ASS.-Hopping	1	1	3	6	
24	40597301	FRAME-Hopping	1	0	3	6	For Maintenance
25	40322101	PLATE-Hopping (caulking)	1	0	3	6	
26	40317401	SHAFT-Hopping	1	0	3	6	
27	40442501	ROLLER-Guide	2	0	6	12	
28	40313201	ROLLER-Assy.-Feed	1	2	4	8	
29	40317601	GEAR-Z38	1	0	1	2	
30	NK3-16SUS	Knock Pin	1	1	3	6	
31	4PP3522-3568P001	ADF Bearing	2	1	2	3	
32	40325401	GEAR-Z58	1	0	1	2	
33	40325301	GEAR-Z42	1	0	1	2	
34	40317901	Lever-Paper end	1	1	3	12	
35	40318001	Lever-Paper near end	1	1	3	12	

Table 8-3 Base Unit (2/2)

No.	Parts No.	Name	Q'ty/U	Reccomended Q'ty			Remarks
				50	100	1000	
36	4YB4120-1137P001	FX050 Photo Sensor	2	2	6	12	
37	40375202	Connection Code-Wire	1	0	1	2	To Paper End
38	40375302	Connection Code-Wire	1	0	1	2	To Paper Near End
39	40337301	LEVER-Sub roller (caulking)	1	0	3	6	
40	40337601	ROLLER-Link (Sub)	1	1	3	6	
41	40433701	Bracket-Sub roller (Press fitting)	1	1	3	6	
42	40358101	Plate-Planet	1	0	3	6	
43	40317701	GEAR-Planet (z28)	1	1	3	6	
44	40367101	BRACKET-Spring (Sub)	1	0	3	6	
45	40928201	SPRING-Sub Roller	1	0	3	6	#
46	40371301	ROLLER Ass.-Hopping	1	2	4	8	
47	40371901	SPRING-Release	1	0	3	6	
48	105A1051C2001	TR-23-11-14 R CORE	3	3	9	18	
49	40298001	PLATE-Base	1	0	3	6	
50	40494601	Spacer-Card (KGPS-5RF)	2	2	6	12	
51	40298101	FILM-Insulation	1	1	3	6	
52	40159901	Power Supply Unit [AC-DC (120V)]	1	2	5	10	ODA (120V)
	40160001	Power Supply Unit [AC-DC (230V)]	1	2	5	10	ODA(230V)/OEL/INT
53	40160301	Power Supply Unit (High Voltage)	1	2	5	10	
54	40307301	BRACKET-AC	1	0	3	6	

Appendix A CENTRONICS PARALLEL INTERFACE

1) Connector

- Printer side : 36-pin receptacle
  Type 57RE-40360-830B-D29 (made by DDK) or equivalent
- Cable side : 36-pin plug
  Type 57-30360 (made by DDK) or equivalent

2) Cable

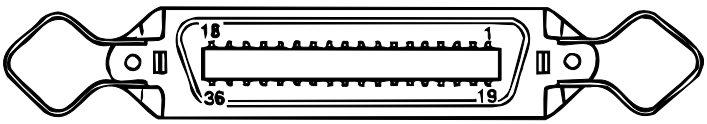
- Cable length : 6 ft (1.8 m) max.
  (a shielded cable composed of twisted pair wires is recommended for noise prevention)

Note: Cable is not provided.

3) Table of parallel I/F signals

Pin No.	Signal name	Signal direction	Compatible	Nibble	ECP
1	$\overline{\text{DATA STROBE}}$	→ PR	nStrobe	Host Clk	Host Clk
2~9	DATA BIT - n	→ PR	Data 1 (LSB) ~ 8 (MSB)		
10	$\overline{\text{ACKNOWLEDGE}}$	← PR	nAck	Ptrclk	PeriphClk
11	BUSY	← PR	Busy	PtrBusy	PeriphAck
12	PAPER END	← PR	Perror	AckDataReq	nAck Reverse
13	SELECT	← PR	Select	Xflag	Xflag
14	$\overline{\text{AUTO FEED}}$	→ PR	nAutoFb	HostBusy	HostAck
15	-	-		-	
16	0V	-		Signal Ground	
17	CHASSIS GROUND	-		Chassis Ground	
18	+5V	← PR		+5V Supply (50mAm)	
19	0V	-		Signal Ground	
20~27	0V	-		Signal Ground	
28	0V	-		Singal Ground	
29	0V	-		Signal Ground	
30	0V	-		Signal Ground	
31	$\overline{\text{INPUT PRIME}}$	→ PR	nInit	nInit	nReverseRequest
32	$\overline{\text{FAULT}}$	← PR	nFault	nDataAvail	nPeriphRequest
33	0V	-		-	
34	-	-		-	
35	HILEVEL	← PR		High Level	
36	$\overline{\text{SEL-IN}}$	→ PR	nSelectIn	1284 Active	1284 Active

- Connector pin arrangement



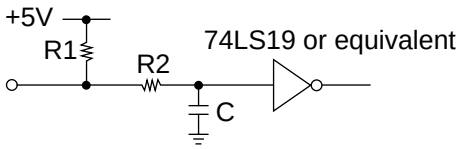
4) Signal level

- LOW : 0 V to +0.8 V
- HIGH : +2.4 V to 5.0 V

5) Interface circuit

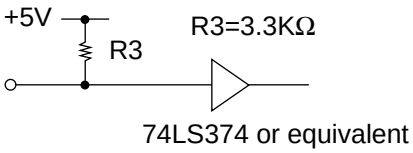
a) Receiving circuit

DATA STROBE and INPUT PRIME

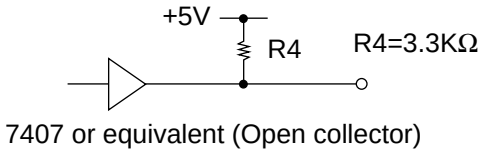


Signal name	R1	R2	C
DATA STROBE	3.3KΩ	100Ω	560pF
INPUT PRIME	3.3KΩ	1KΩ	0.001μF

DATA BIT-1 to 8



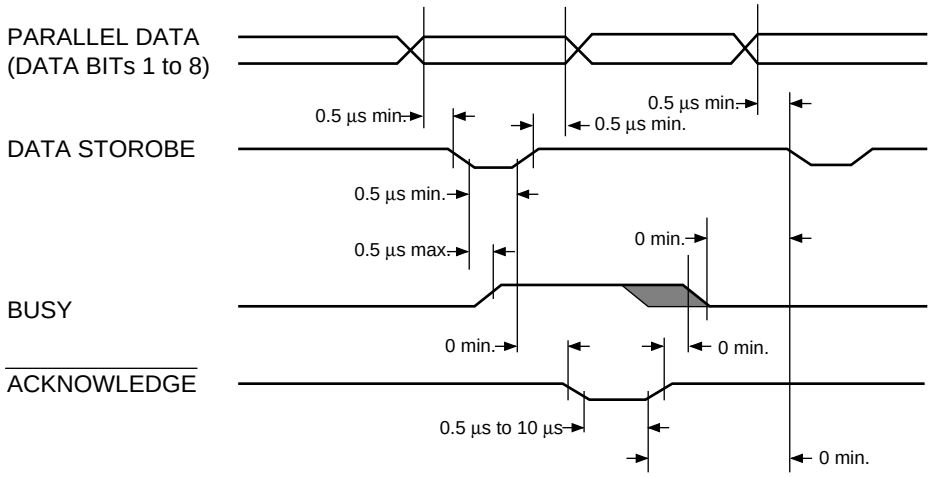
b) Sending circuit



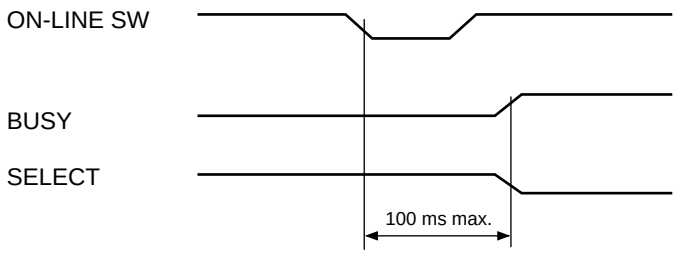
6) Timing charts

■ Compatible mode

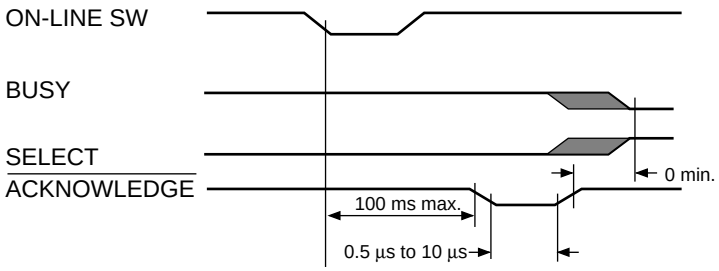
a) Data receiving timing



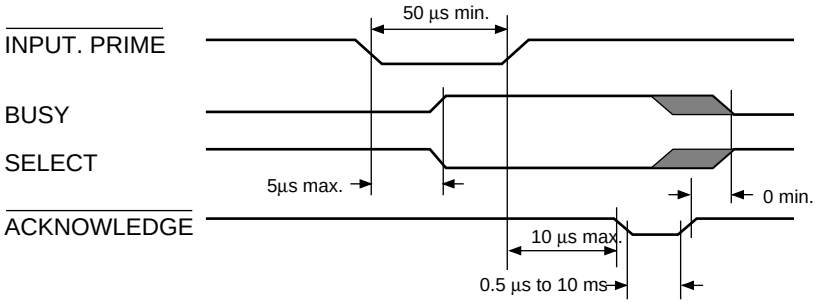
b) On-line → off-line switching timing by ON-LINE SW



c) Off-line → on-line switching timing by ON-LINE SW



d) INPUT PRIME timing (when set to the effective INPUT PRIME signal)



■ Nibble Mode
Conforms to IEEE 1284 spec.

■ ECP Mode
Conforms to IEEE 1284 spec.

Appendix B RS-232C SERIAL INTERFACE

1) Connector

- Printer side : 25-pin receptacle
  Type 17LE-13250-27 (D4CC) (made by DDK) or equivalent
- Cable side : 25-pin plug
  Type 17JE-23250-02 (D8C) (made by DDK)

Note: Plug shall be able to be fixed with a lock screw.

2) Cable

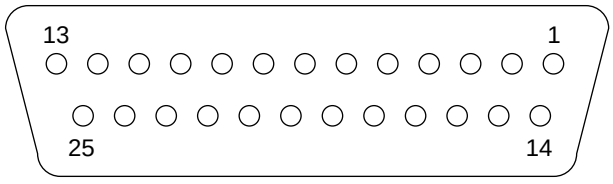
- Cable length: 6 ft (1.8m) max. (Cable shall be shielded)

Note: Cable is not provided.

3) Interface signal

Pin No.	Signal name	Abbreviation	Signal direction	Functions
1	Frame Ground	FG		Frame ground
2	Transmitted Data	TD	← PR	Transmitted data
3	Received Data	RD	→ PR	Received data
4	Request To Send	RTS	← PR	Stay space level
5	-			(Not connected)
6	-			(Not connected)
7	Signal Ground	SG		Signal ground
8~17	-			(Not connected)
18	+5V		← PR	+5V (50mA maxx.)
19	-			(Not connected)
20	Data Terminal Ready	DTR	← PR	Data terminal ready
21~25	-			(Not connected)

- Connector pin arrangement



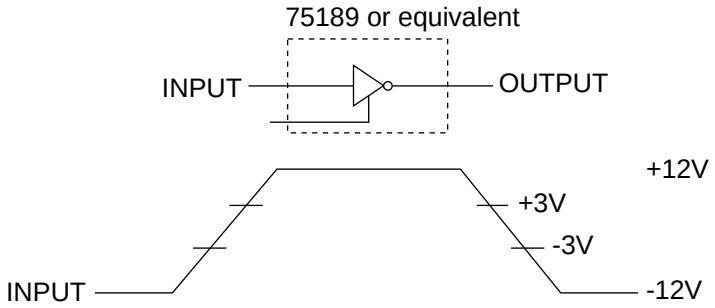
(View from the cable side)

When the Reade/Busy protocol is used for the buffer busy control method, the busy signal can be set to Pin-20 (DTR) in the menu.

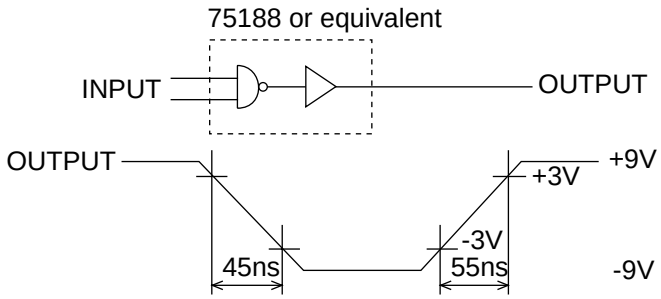
4) Signal level

- MARK polarity : -3V to -15V (LOGIC = 1)
- SPACE polarity: +3V to +15V (LOGIC = 0)

5) Interface circuit
   a) Receiving circuit



   b) Sending circuit



   Note: The above signal level is for the case where 3KΩ x 15pF is being connected to the terminal.

6) Communications protocol
   a) READY/BUSY protocol
   b) X-ON/X-OFF protocol

Appendix C DUPLEX UNIT MAINTENANCE

1. OUTLINE

1.1 Functions

DUPLEX UNIT is a unit, which is installed on the printer unit for controlling both-sided printing from the printer unit, intended for automatically reversing papers of which one side have been already printed and re-feeding them to the unit for printing other side.
The main functions are the followings:

- Paper that can be used:

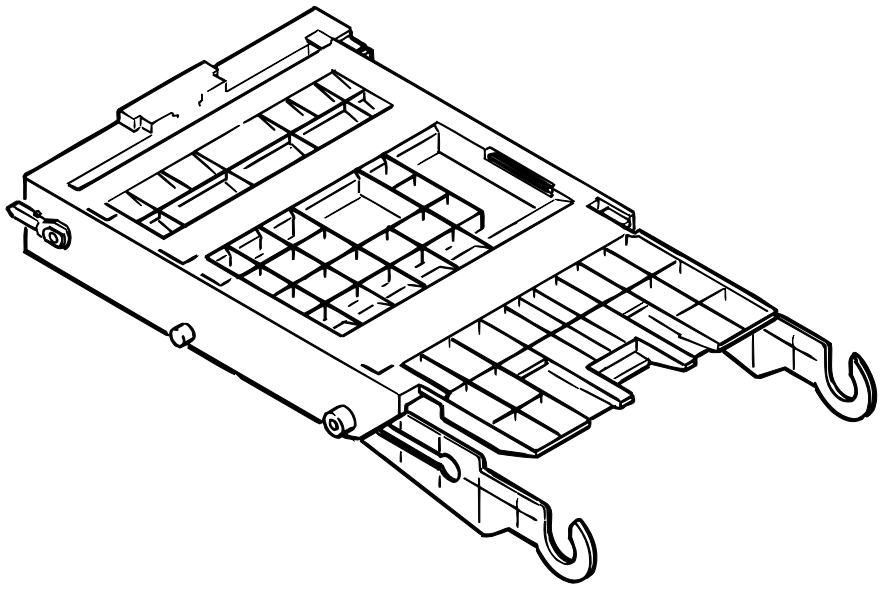
[Paper Type]

- Cut Sheet Size: A4, Letter, Executive, Legal13, Legal14
- Special Size: Paper Width: 210 to 216mm
  Paper length: 279 to 356mm

[Weight]

- 16 lbs ~ 24 lbs (64 ~ 81 g/m^{2})

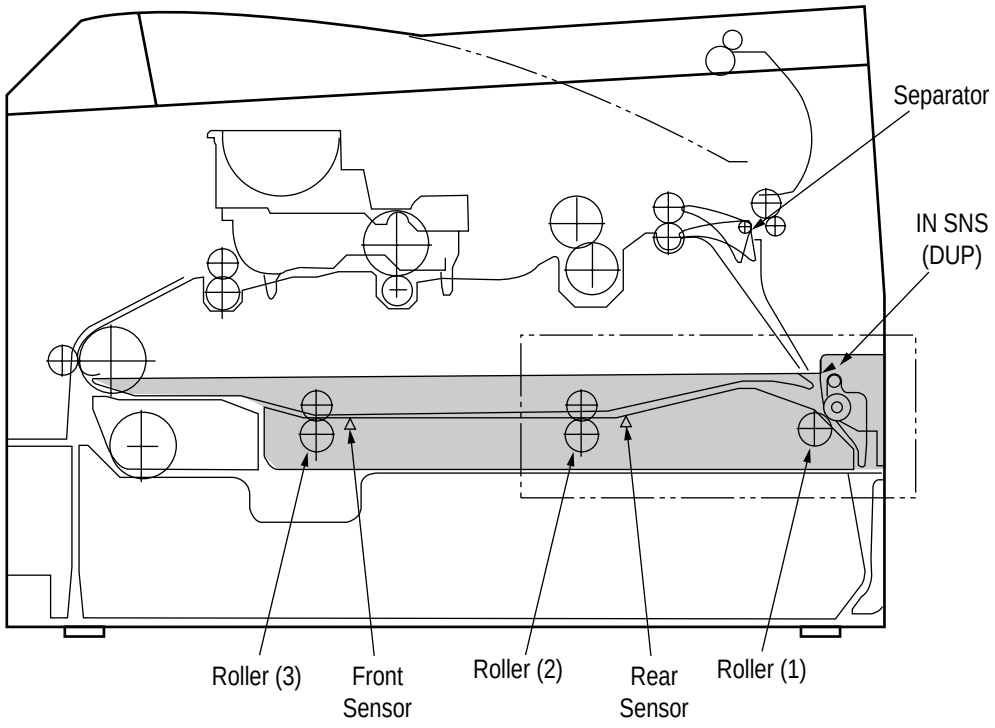
1.2 External View and Component Names



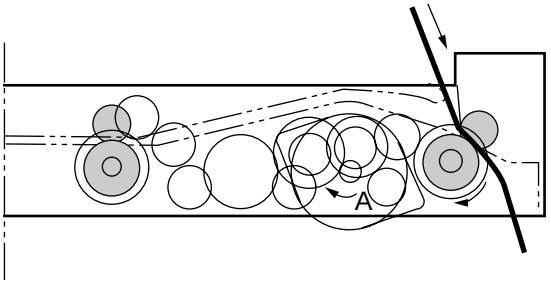
2. MECHANISM DESCRIPTION

2.1 General Mechanicsm

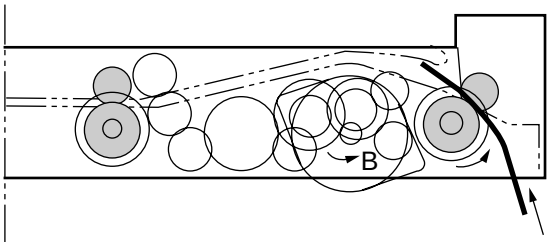
When the Duplex Unit receives an instruction for both-sided printing from the unit, the separator will be opened by the action of a solenoid within Duplex and the route will be shifted to the one into the Duplex after one-sided printing of papers, which are fed from the tray, are completed. At this time, as the roller (1) rotates in the direction of arrow A, a sheet is retracted in the rear of the cassette. And then, a given time later after the edge of the sheet passes through the IN SNS (DUP), the roller will reverse and the roller (1) rotates in the direction of arrow B and sending out the paper into the Duplex. After that, it passes though the roller (2) and (3), and is fed again into the unit, given another-sided printing and ejected.



<In retracting paper>

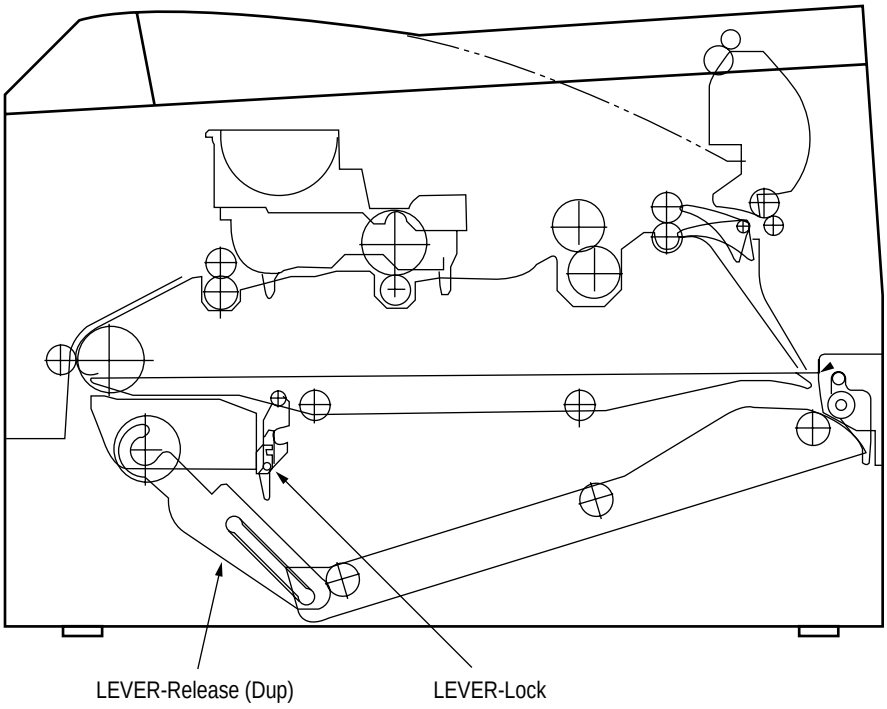


<In sending out paper>



2.2 JAM Release Mechanism

The LEVER-Lock can be pulled outwards and the sheet route section of the Duplex opens by pulling out the cassette. This enables a jam to be released. Structurally, the LEVER-Release can be pushed up by back edge of cassette and the sheet route automatically close when the cassette is returned.

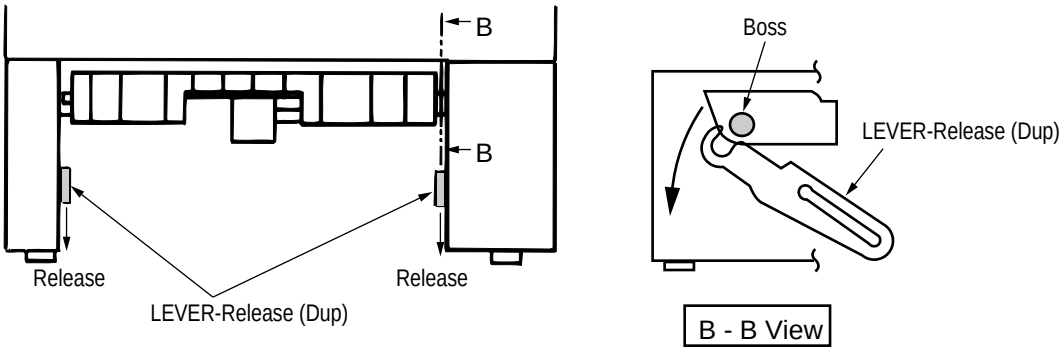


2.3 Removing/Installing Duplex Unit

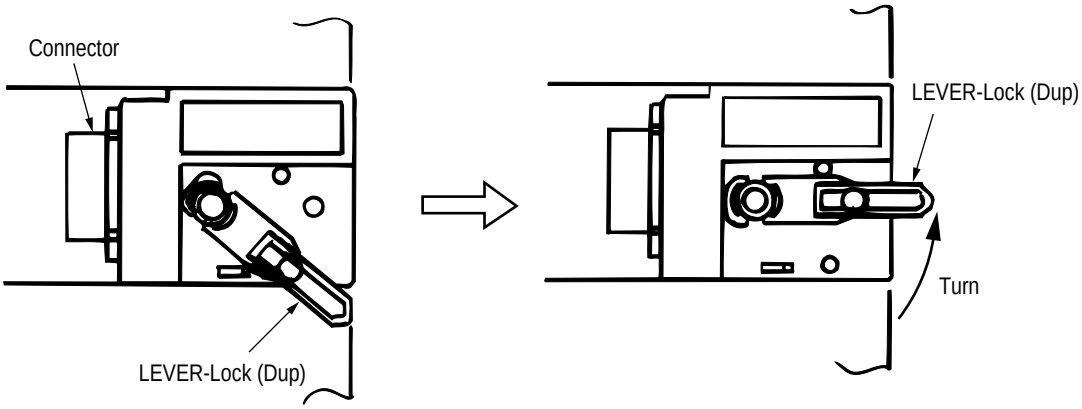
Removing Duplex Unit

(1) Power Off and remove the Paper-Cassette from 1st tray.

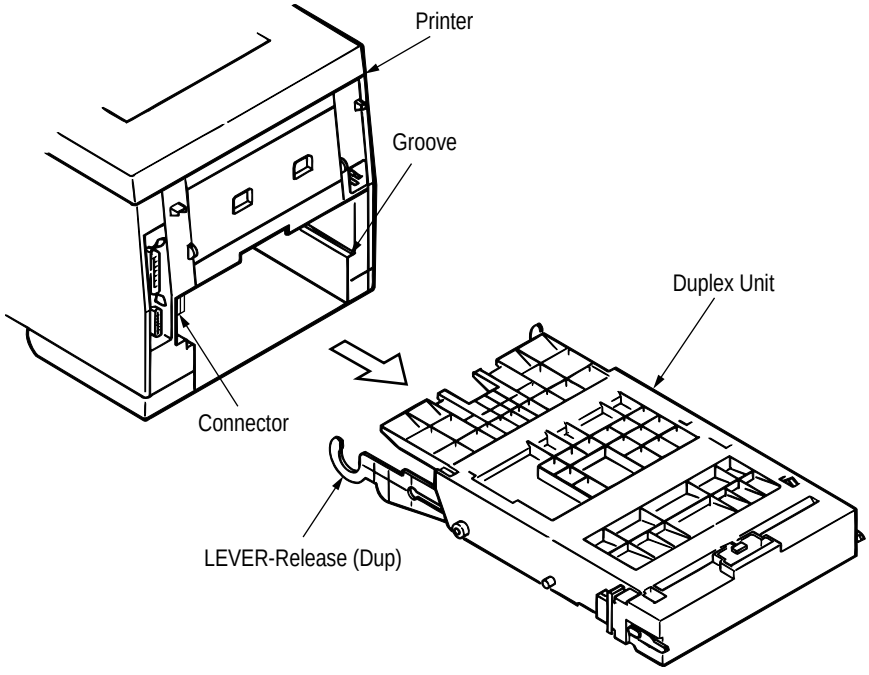
(2) Remove the LEVER-Release (Dup) from the boss of the Hopping Frame.



(3) Rotate the LEVER-Lock (Dup) in the direction of the arrow to release the Lock.

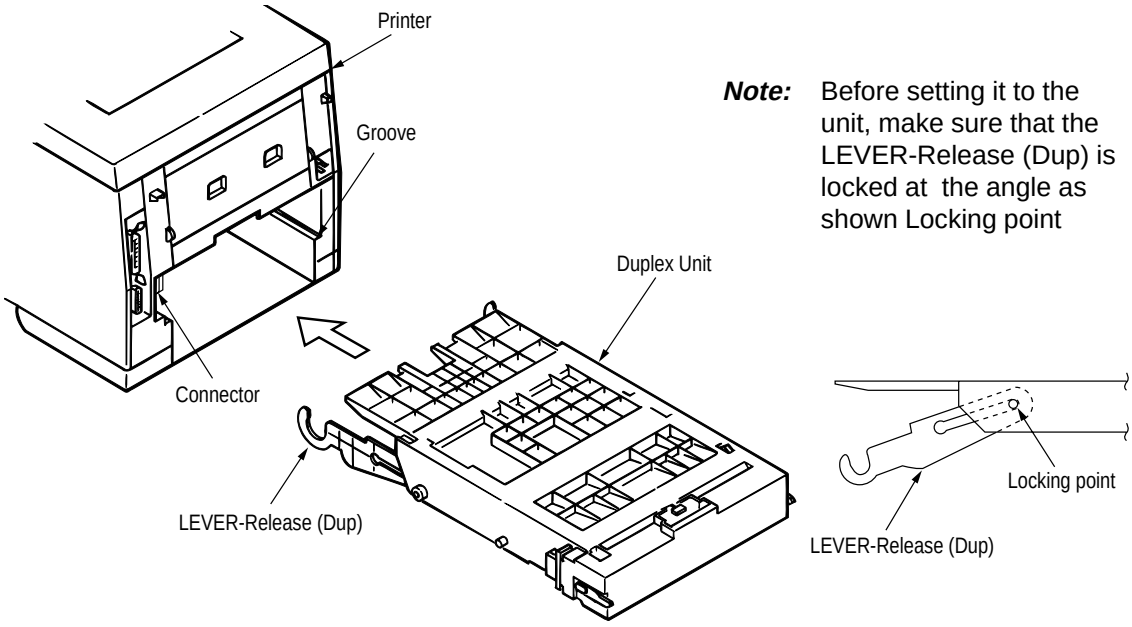


(4) Pull the Duplex Unit out of the unit.



Installing Duplex Unit

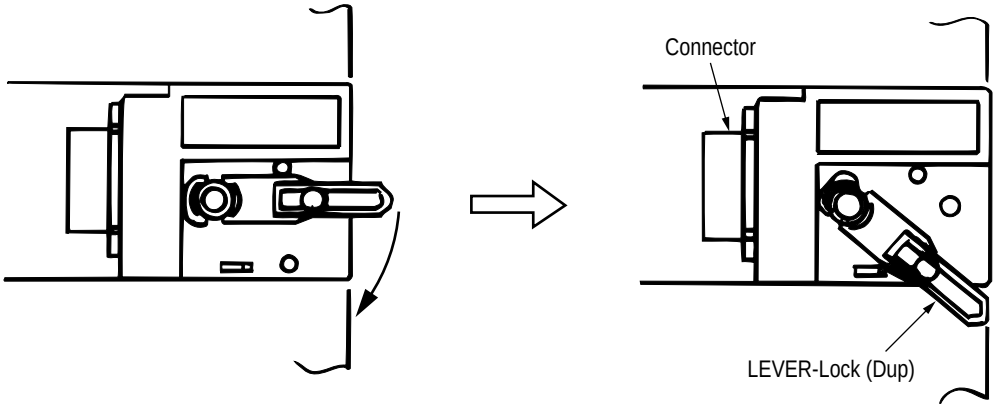
(1) Hold the LEVER-Lock (Dup) in horizontal lock position.
Then insert the Duplex Unit along the groove, up to accord both rear faces between printer and Duplex Unit.



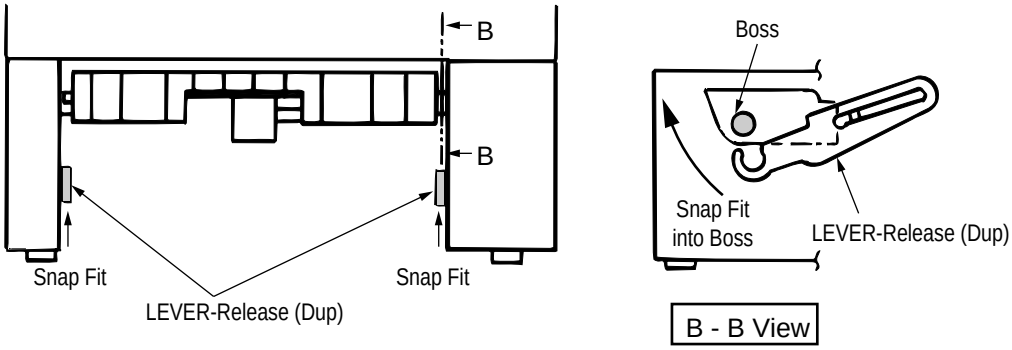
Note: Before setting it to the unit, make sure that the LEVER-Release (Dup) is locked at the angle as shown Locking point

Note: Printer and Duplex Unit will connect automatically with built-in connector.

(2) Lock the Duplex Unit to the printer by turning the LEVER-Lock (Dup) to the next locking position as below.



(3) From front side of printer, snap fit LEVER-Release (Dup) into the boss in Hopping Frame.



(4) After installing Duplex Unit, put back the Paper Cassette into 1st Tray.

3. PARTS REPLACEMENT

This section covers the procedures for the disassembly, reassembly and installations in the field. This section describes the disassembly procedures, and for reassembly procedures, basically proceed with the disassembly procedures in the reverse order.

3.1 Precautions Concerning Parts Replacement

(1) Parts replacements must be carried out, by first turning the printer power switch off “O” and removing the Duplex Unit from the printer.

(2) Do not disassemble the Duplex Unit if it is operating normally.

(3) Establish the extent of disassembly suitable for the purpose of the procedure, and do not disassemble any more than necessary.

(4) Only specified service tools may be used.

(5) Disassembly must be carried out according to the prescribed procedures. Parts may be damaged if such procedures are not followed.

(6) Small parts such as screws and collars can easily be lost, therefore these parts should be temporarily fixed in the original location.

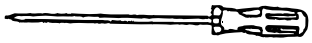
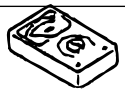
(7) When handling printed circuit boards, do not use any glove which may generate static electricity.

(8) Do not place the printed circuit boards directly on the equipment or floor.

[Service Tools]

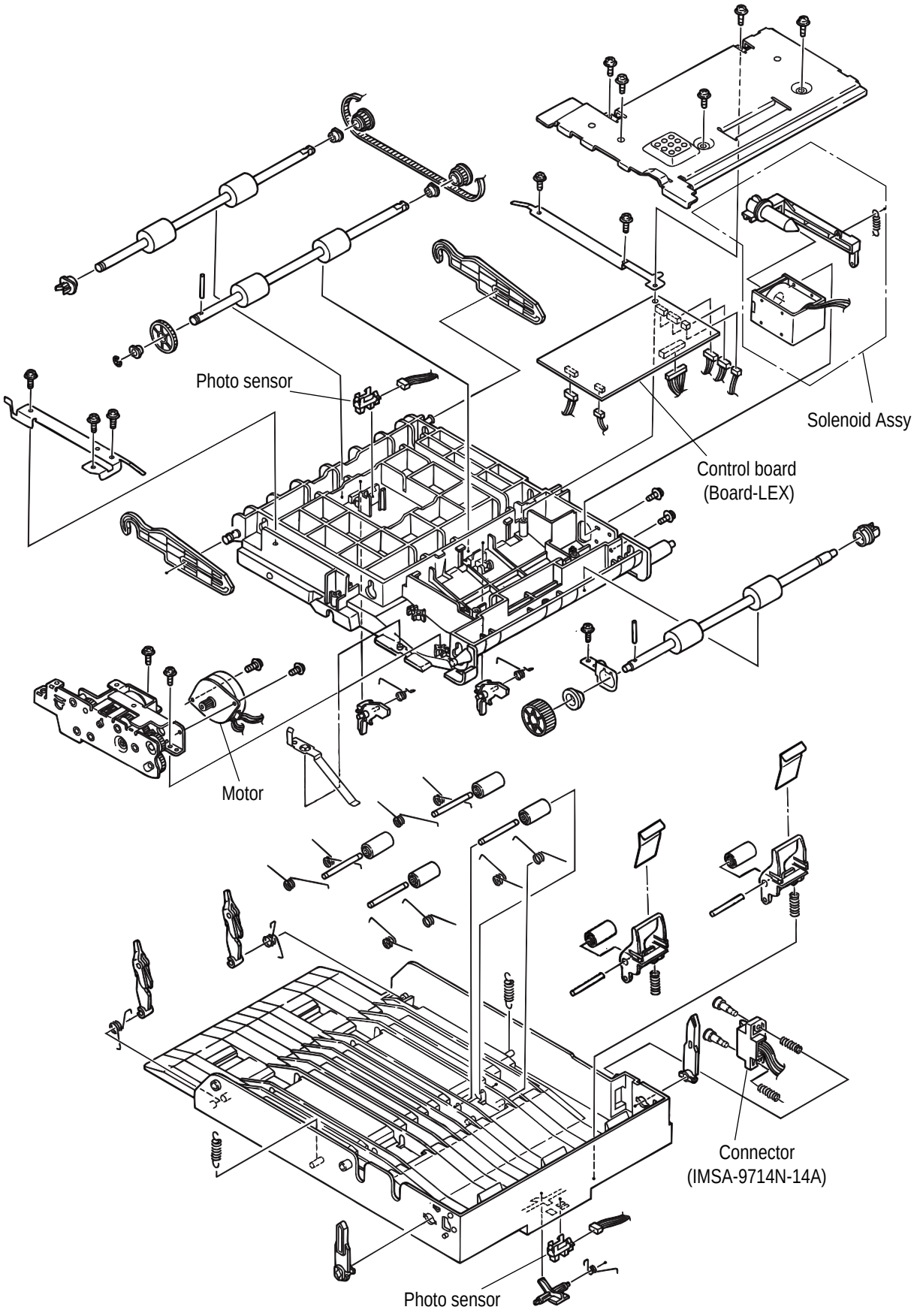
Table 3-1 shows the tools required for the replacement of printed circuit boards and units in the field.

Table 3-1 Service Tools

No.	Service Tools		Q'ty	Place of use	Remarks
1		No. 1-100 Philips screwdriver	1	2~2.5 mm screws	
2		No. 2-100 Philips screwdriver	1	3~5 mm screws	
3		No. 3-100 screwdriver	1		
4		No. 5-200 screwdriver	1		
5		Digital multimeter	1		
6		Pliers	1		
7		Handy cleaner	1		
8		Connector remover OKI P/N: 4PP4076-5395P1	1		

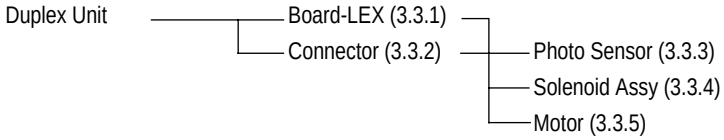
3.2 Parts Layout

This section describes the layout of the main components.



3.3 Parts Replacement Methods

This section describes the parts replacement methods for the components listed in the disassembly order diagram below.

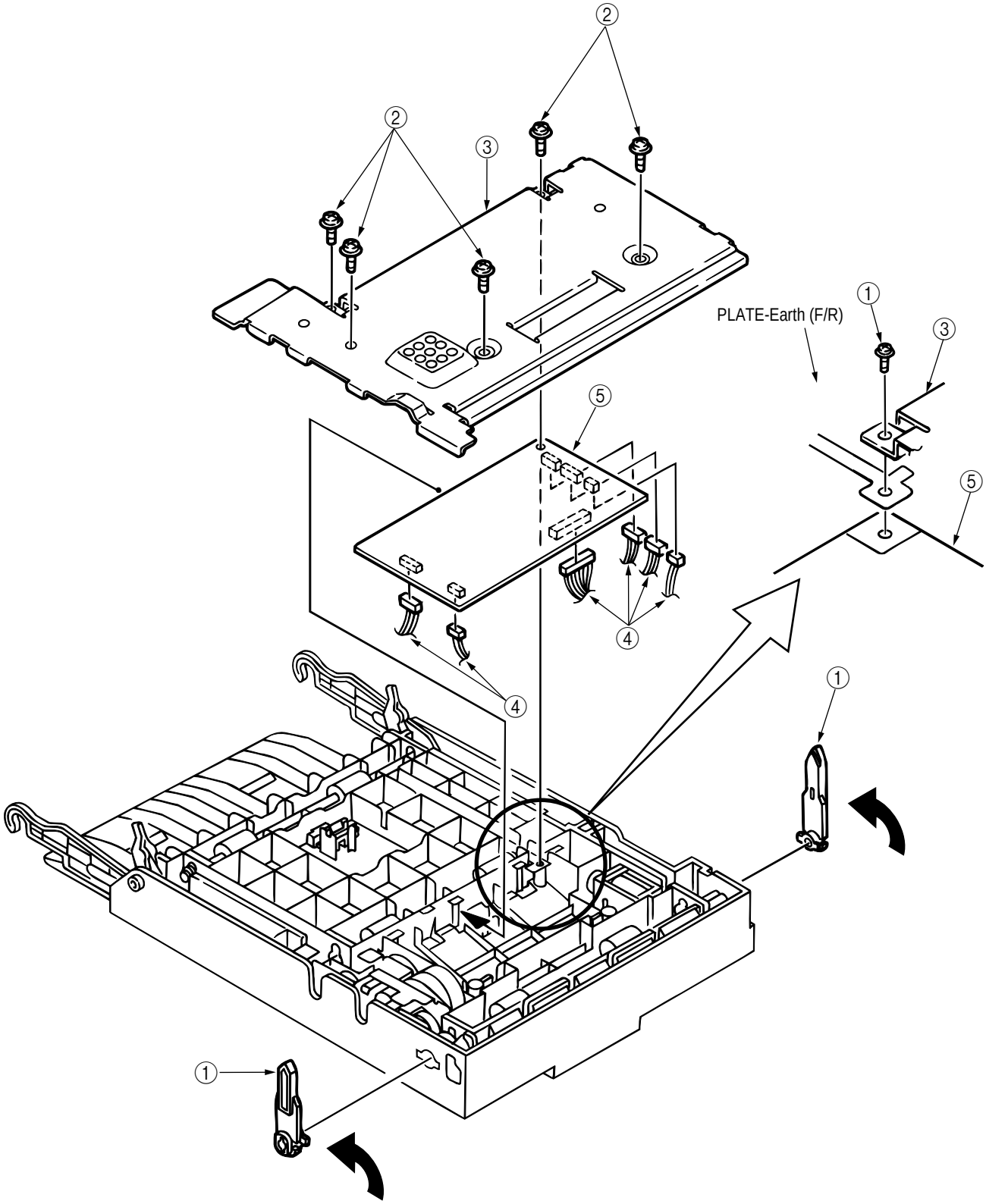


3.3.1 Board-LEX

(1) Remove two LEVER-Lock (DUP) ① by rotating them in the arrow direction.

(2) Unscrews five screws ② to remove the bracket ③.

(3) Unlatch all the nails and unplug all the connectors ④ to remove the Board-LEX ⑤.
[**Note** : When installing the Board-LEX, install it, positioning earth plate over the PCB.]

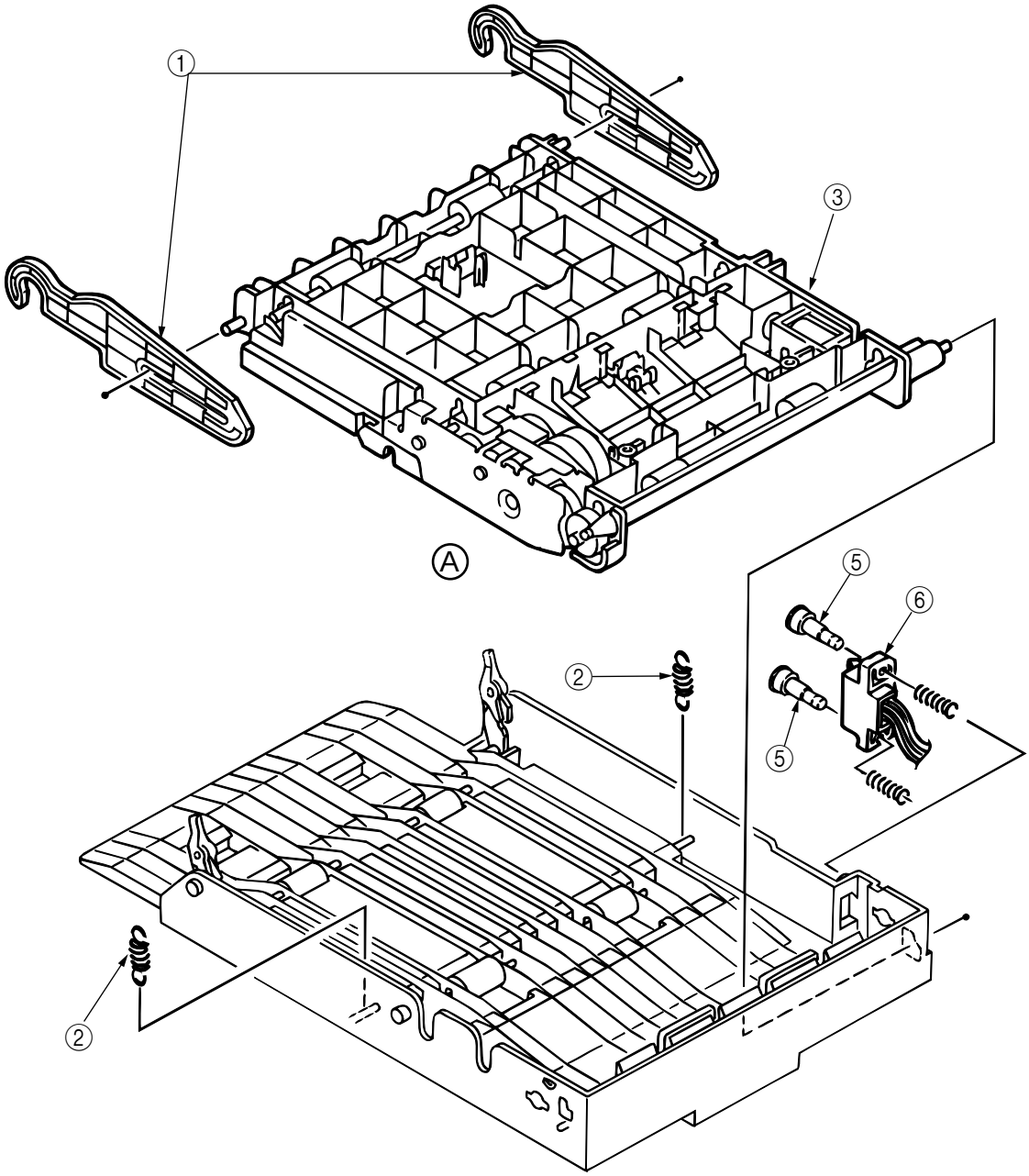


3.3.2 Connector (IMSA-9714N-14A)

(1) Remove two LEVER-Release (DUP) ①.

(2) Take away two SPRING-Support ② to remove FRAME-MAIN (DUP) ③.
(Remove the FRAME-MAIN (DUP) by lifting in up from Ⓐ side)

(3) Remove two STUD ④ to unplug the Connector (IMSA-9714N-14A) ⑤.



3.3.3 Photo Sensor

(1) Remove the Frame-Main (DUP) (see section 3.3.2).

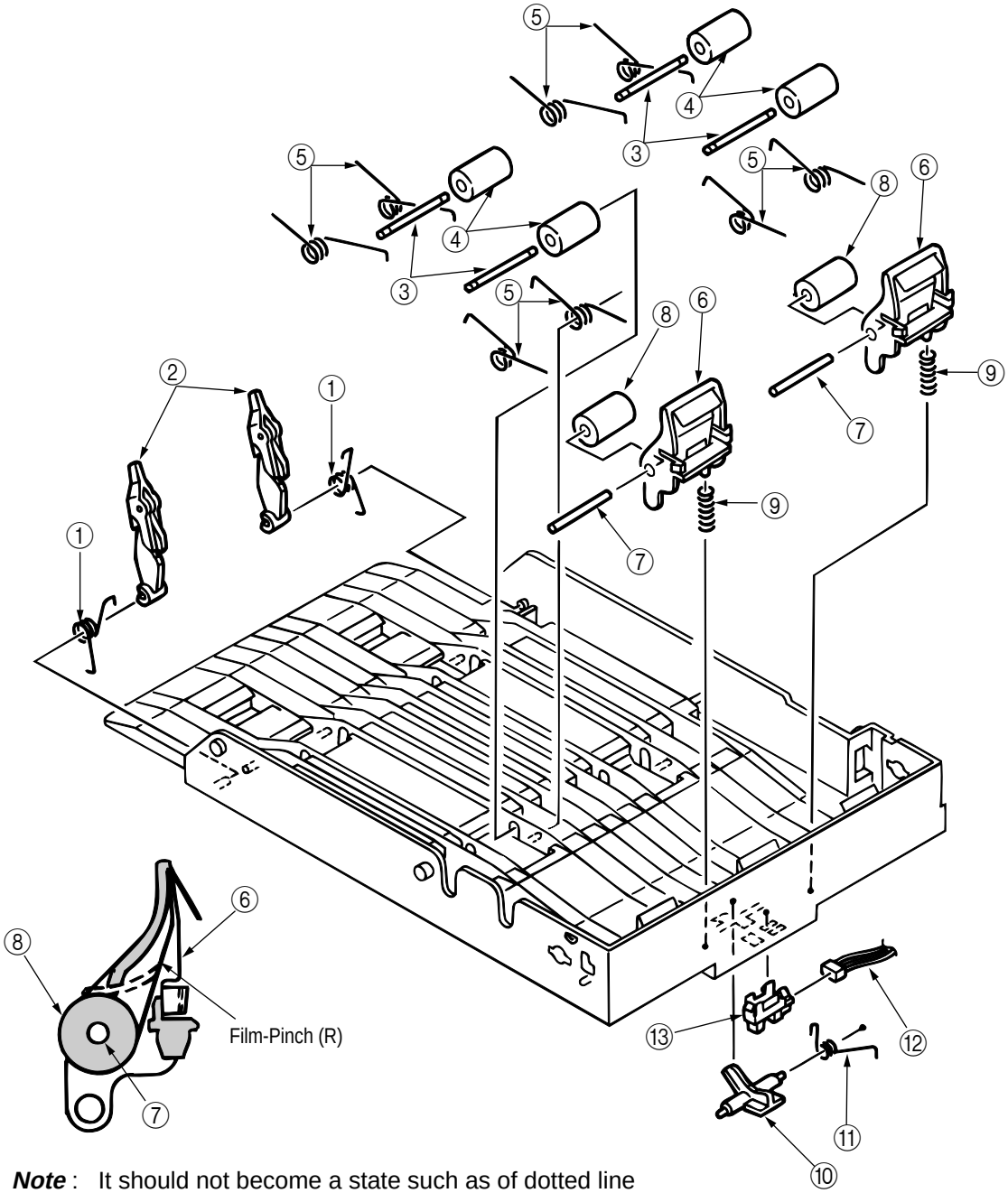
(2) Release the lock to remove two SPRING-Lock (frame) ① and two LEVER-Lock Assy ②.

(3) Pull out four SHAFT-Pinch ③ and remove four ROLLER-Pinch ④ and eight SPRING-Pinch (u) ⑤.

(4) Release the lock to remove two BRACKET-Pinch ⑥ , and two SPRING-Pinch(R) ⑨.

(5) Release the lock to remove LEVER Sensor (D-IN) ⑩ and SPRING-Sensor ⑪.

(6) Unplug the Connection Code-Wire ⑫ and remove Photo Sensor ⑬.



Note : It should not become a state such as of dotted line from the results of installation.

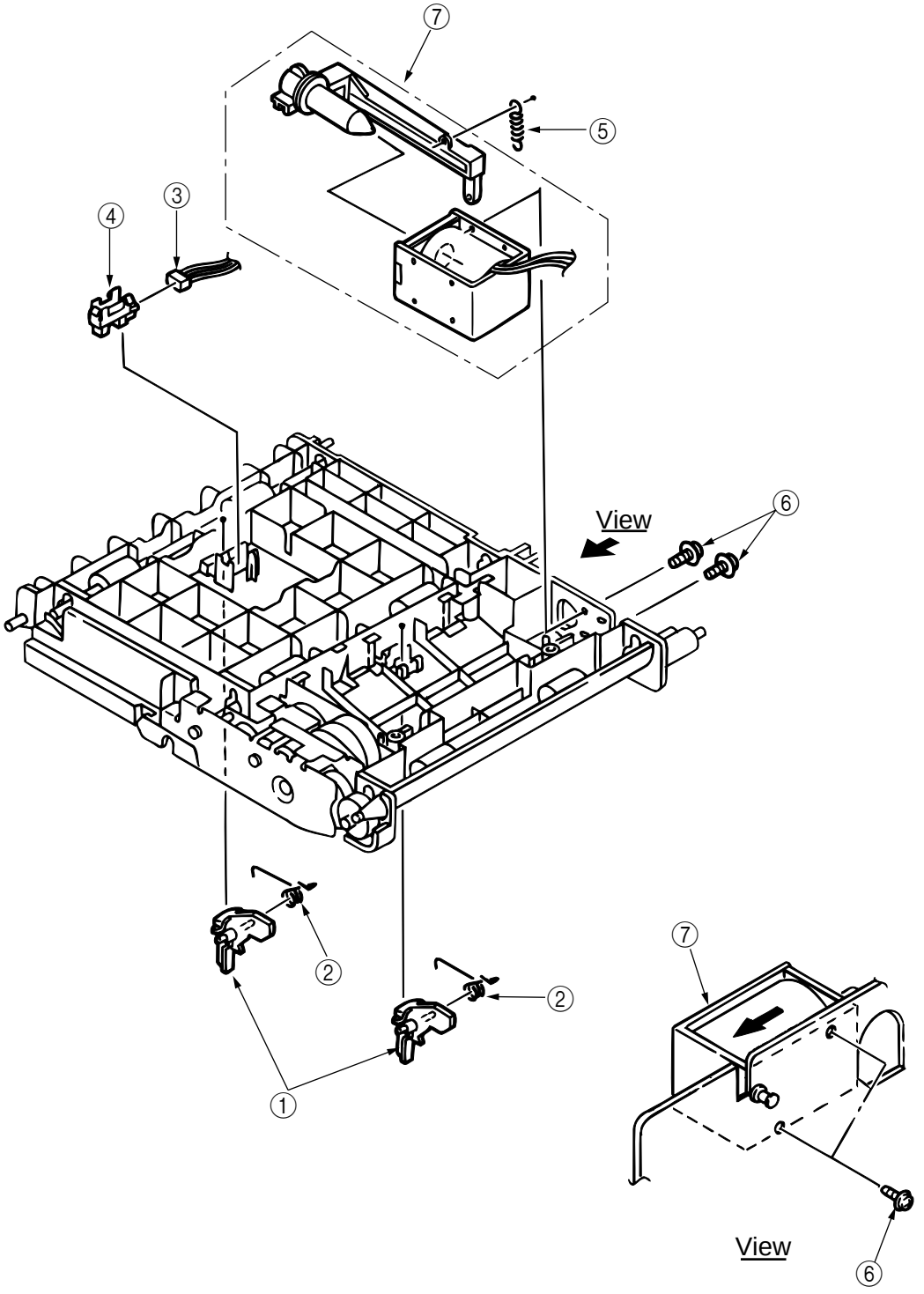
3.3.4 SOLENOID Assy

(1) Remove the Frame-Main (DUP) (See section 3.3.2).

(2) Release the lock to remove Two LEVER Sensor (F/R) ① and two SPRING-Sensor (F/R) ②.

(3) Unplug the Connection Code-Wire ③ and remove Photo Sensor ④.

(4) Take away the SPRING-SL ⑤ and two screws ⑥ to remove SOLENOID Assy ⑦.



3.3.5 Motor

(1) Remove the Frame-Main (DUP) (See section 3.3.2).

(2) Unscrew two screws ① to remove PLATE-Earth (F/R) ②.

(3) Unscrew three screws ③ to remove PLATE-Earth (F/R-2) ④.

(4) Disengage the latch to remove the Bearing L ⑤ , GEAR-Z40S8 ⑥ , Bearing ⑦and ROLLER-Feed (RV) ⑧. (At this time, Knock Pin ⑨ can be removed simultaneously.)

(5) Unscrew the screw ⑩ to remove the PLATE-Earth (BTM) ⑪.

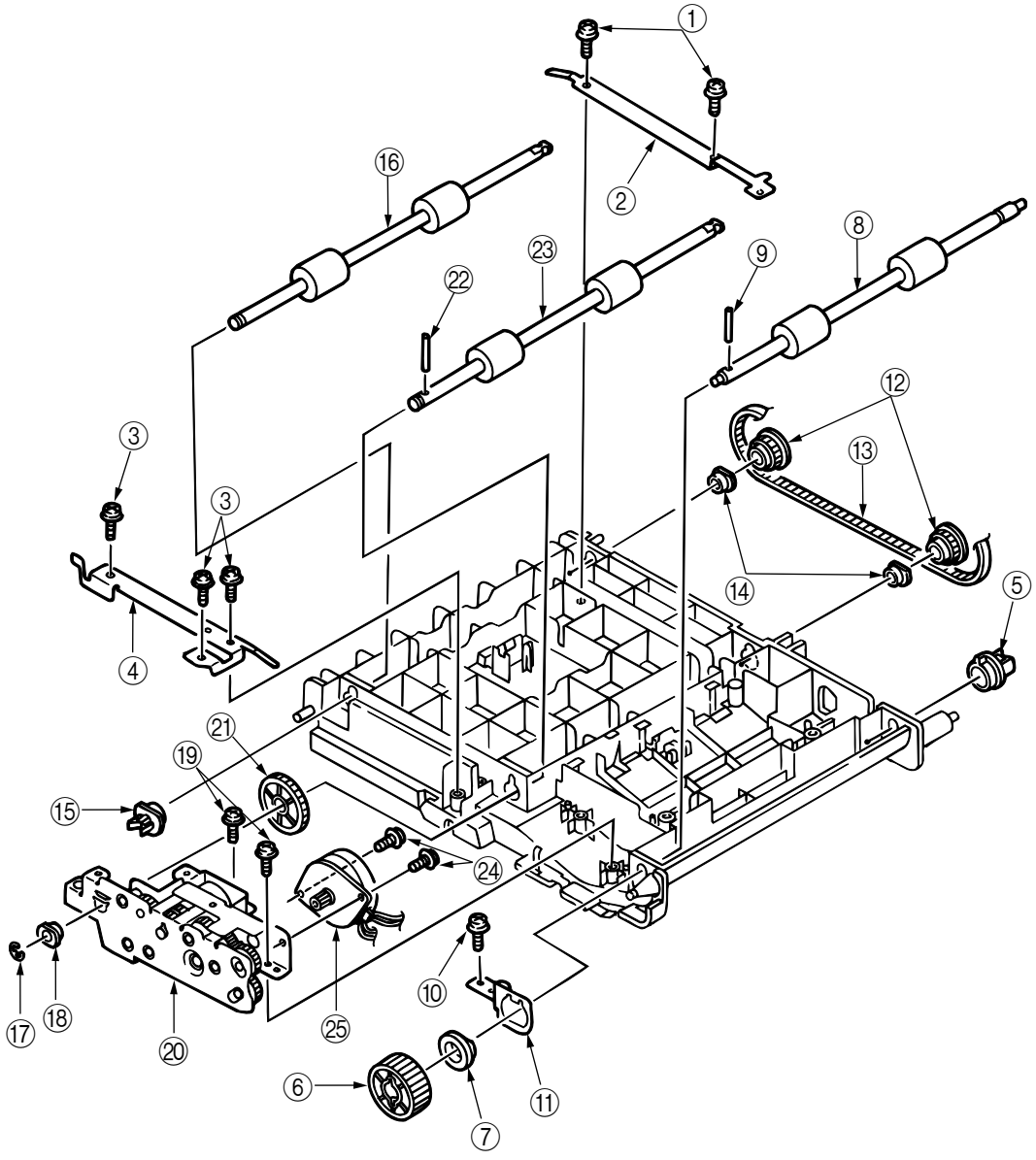
(6) Disengage the latch and remove two PULLEY-MX25 ⑫ , Mini-Pitch Belt ⑬ and two Bushes ⑭.

(7) Disengage the latch to remove the Bearing Feed ⑮ and ROLLER Feed (F) ⑯.

(8) Remove the E-Ring ⑰ and Bush ⑱.

(9) Unscrew two screws ⑲ to remove the GEAR Assy ⑳.
(At this time, the GEAR-Z40S6 ㉑ , Knock Pin ㉒ and ROLLER-Feed (R) ㉓ can be removed.)

(10) Unscrew two screws ㉔ to remove Motor ㉕.



4. TROUBLESHOOTING

4.1 Precautions Prior to the Troubleshooting

(1) Go through the basic checking items provided in the Operator Guide.

(2) Obtain detailed information concerning the problem from the user.

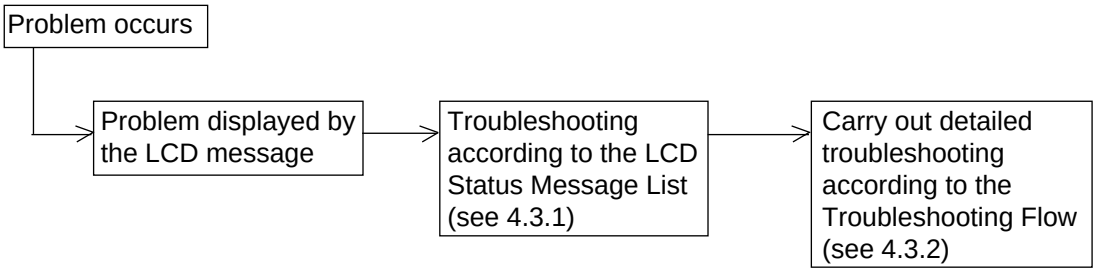
(3) Go through the checking in the conditions similar to that in which the problem occurred.

4.2 Preparations for the Troubleshooting

(1) Display on the Operator panel
The status of the problem is displayed on the LCD (Liquid Crystal Display) on the Operator panel. Go through the appropriate troubleshooting procedures according to the messages displayed on the LCD.

4.3 Troubleshooting Method

When a problem occurs, go through the troubleshooting according to the following procedure.


Problem occurs
Problem displayed by the LCD message
Troubleshooting according to the LCD Status Message List (see 4.3.1)
Carry out detailed troubleshooting according to the Troubleshooting Flow (see 4.3.2)

4.3.1 LCD Status Message List

The listing of the statuses and problems displayed in the form of messages on the LCD is provided in Table 4-1.

Table 4-1

Classification	LCD Status Message	Description	Recovery method
Jam Error	DUPLEX INPUT JAM REMOVE THE PAPER	Informs that a jam occurs in feeding papers to the Duplex Unit.	• Remove all the papers from the inside of printer unit and Duplex unit and close the cover.
Jam Error	DUPLEX FEED JAM1 REMOVE THE PAPER	Informs that a jam occurs in retracting papers into the reverse roller within the Duplex Unit.	• Remove all the papers from the inside of printer unit and Duplex unit and close the cover.
Jam Error	DUPLEX FEED JAM2 REMOVE THE PAPER	Informs that a jam occurs in reversing papers in the reverse roller within the Duplex Unit.	• Remove all the papers from the inside of printer unit and Duplex unit and close the cover.
Jam Error	DUPLEX FEED JAM3 REMOVE THE PAPER	Informs that a jam occurs in impinge-feeding papers within the Duplex Unit.	• Remove all the papers from the inside of printer unit and Duplex unit and close the cover.
Jam Error	DUPLEX OPEN JAM REMOVE THE PAPER	Informs that the 1st tray is pulled out in paper-remaining state when feeding papers within the Duplex.	• Remove all the papers from the inside of printer unit and Duplex unit and close the cover.
Interface Timeout	ERROR 83	Informs that an I/F time-out occurs between the printer and Duplex.	• Verify connection of LEX-PCB and square-shaped connector. Replace the square-shaped connector if necessary. • Replace LEX-PCB

4.3.2 Troubleshooting Flow

- (JAM error)

Duplex INPUT JAM

- Is the leading edge of paper is fed in the Duplex unit?
  - Yes Has the leading edge of paper reached the Duplex In sensor
    - Yes Is the Duplex In sensor lever operating normally?
      - Yes Is the connection cord between the Duplex In sensor and the Board-LEX connected properly?
        - Yes Does the connection cord have a break?
          - Yes Replace the connection cord (Connection Code-Wire).
          - No Replace the Duplex In sensor (FX50 Photo Sensor)
          - YES END
      - No Connect the connection cord properly.
    - No Replace the Duplex In sensor lever (LEVER-Sensor (D-IN) and SPRING-Sensor (D-IN)).
  - No Is the connection cord between the Motor and the Board-LEX?
    - Yes Replace the GEAR Assy.
    - YES END
    - No Replace the Motor.
    - YES END
    - No Replace the Board-LEX.
  - No Connect the connection cord properly.
- No Does the square-shaped connector between the Duplex unit and printer unit has any trouble?(Is there a pin bend or other troubles?)
  - Yes Is the connection cord between the Duplex unit and the printer unit connected properly?(See Chapter 7.1 and Appendix C Chapter 5.1)
    - Yes Does the connection cord have a break?
      - Yes Replace the connection cord (Core Assy-DUPLEX).
    - No Is the connection between the solenoid and the Board-LEX connected properly?
      - Yes Replace the SOLENOID Assy.
      - YES END
      - No Replace the Board-LEX.
    - No Connect the connection cord properly.
  - No Connect the connection cord properly.
- No Replace the square-shaped connector (Connector (IMSA-9714N-14A)).

Duplex FEED JAM1

- Is there a paper on the Duplex In sensor lever?
  - No Is the Duplex In sensor operating normally?
    - Yes Is the connection cord between the Duplex In sensor and the Board-LEX connected properly?
      - Yes Does the connection cord have a break?
        - Yes Replace the connection cord (Connection Code-Wire).
      - No Replace the Duplex In sensor (FX50 Photo Sensor).
      - YES END
      - No Replace the Board-LEX.
    - No Connect the connection cord properly.
  - No Replace the Duplex In sensor lever (LEVER-Sensor (D-IN) and SPRING-Sensor (D-IN)).
- YES Remove the paper.

Duplex FEED JAM2

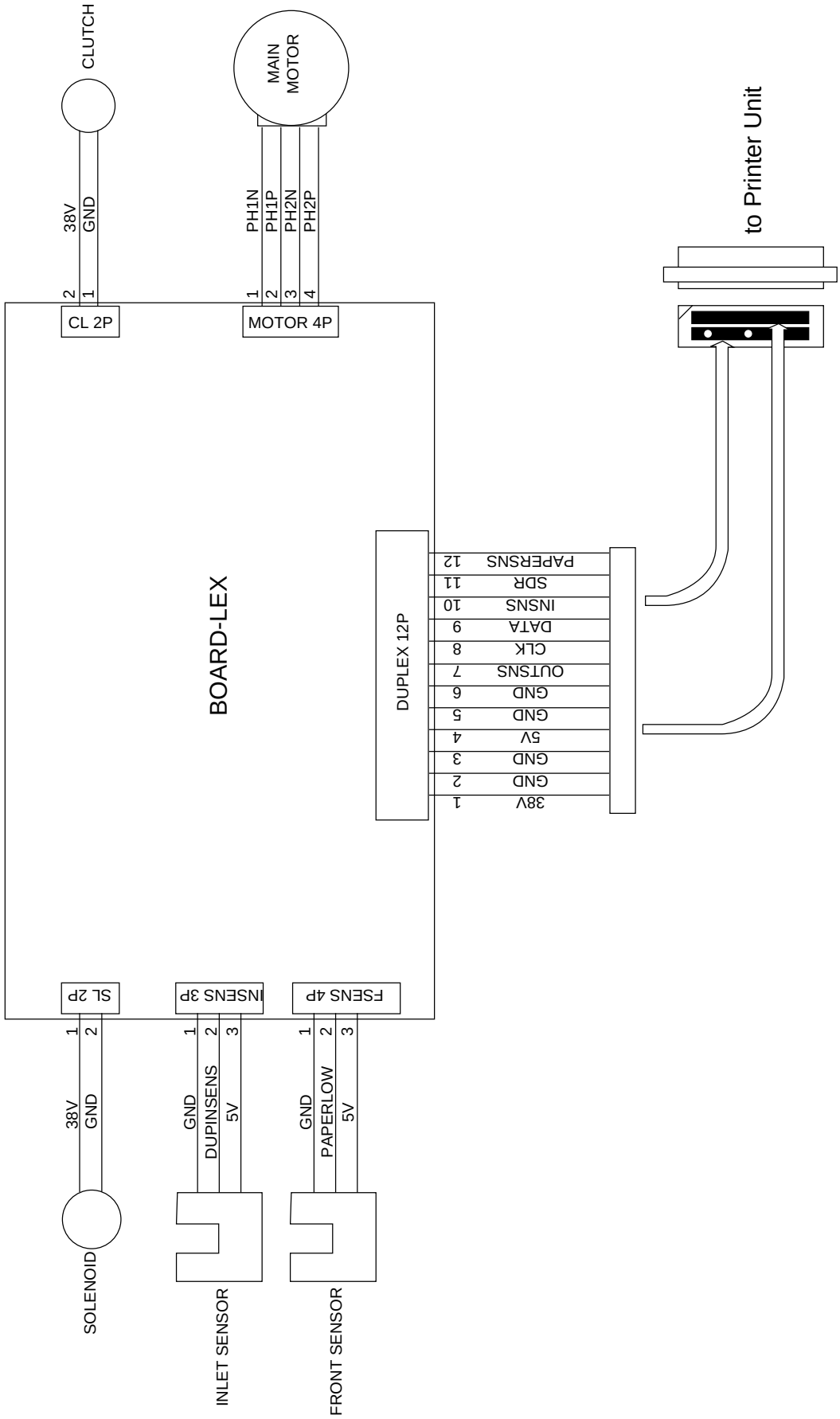
- Has a paper reached the Duplex Rear sensor?
  - No Is the connection cord between the clutch and the Board-LEX connected properly?
    - Yes Replace the GEAR Assy.
    - YES END
    - No Replace the Board-LEX.
  - No Connect the connection cord properly.
- Yes Is the Duplex Rear sensor operating normally?
  - Yes Replace the Board-LEX.
- No Replace the Duplex Rear sensor lever (LEVER-Sensor (F/R) and SPRING-Sensor (F/R)).

Duplex FEED JAM 3

- Has a paper reached the Duplex Front sensor?
  - No Is the connection cord between the clutch and the Board-LEX properly?
    - Yes Replace the GEAR Assy.
    - YES END
    - No Replace the Board-LEX.
  - No Connect the connection cord properly.
- Yes Is the Duplex Front sensor lever operating normally?
  - Yes Is the connection cord between the Duplex Front sensor and the Board-LEX connected properly?
    - Yes Does the connection cord have a break?
      - Yes Replace the Duplex Front sensor (FX50 Photo Sensor).
      - YES END
      - No Replace the Board-LEX.
    - No Connect the connection cord properly.
  - No Replace the Duplex Front sensor lever (LEVER-Sensor (F/R) and SPRING-Sensor (F/R)).

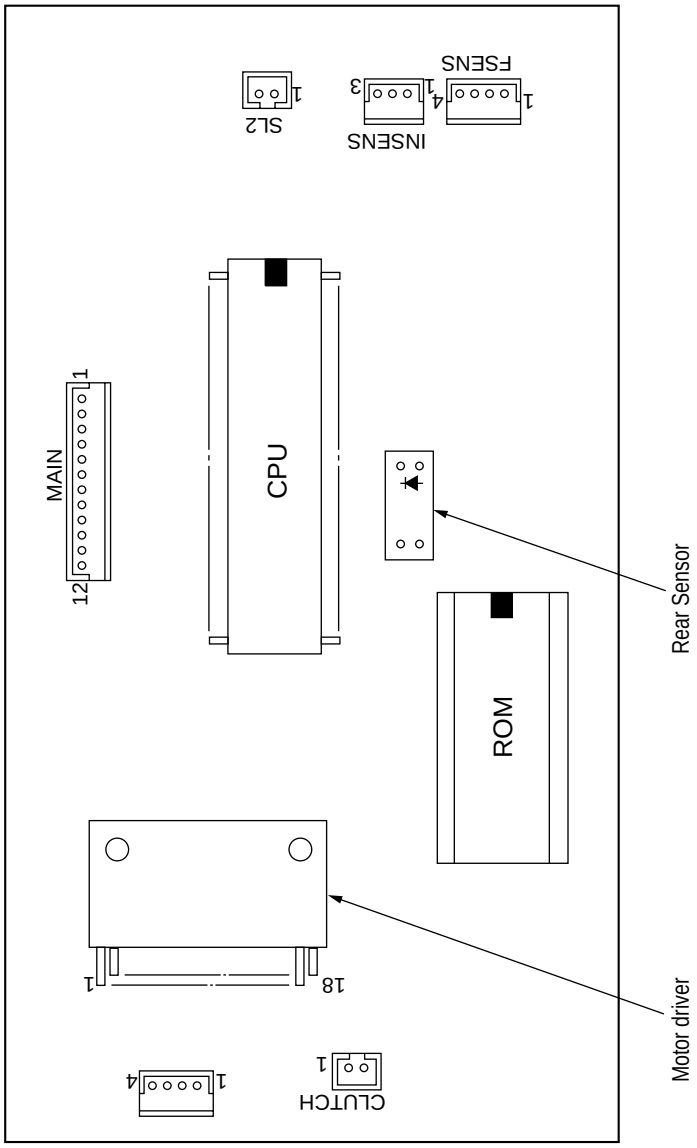
5. CONNECTION DIAGRAM

5.1 Interconnection Diagram



5.2 PCB Layout

LEX-PCB



6. PARTS LIST

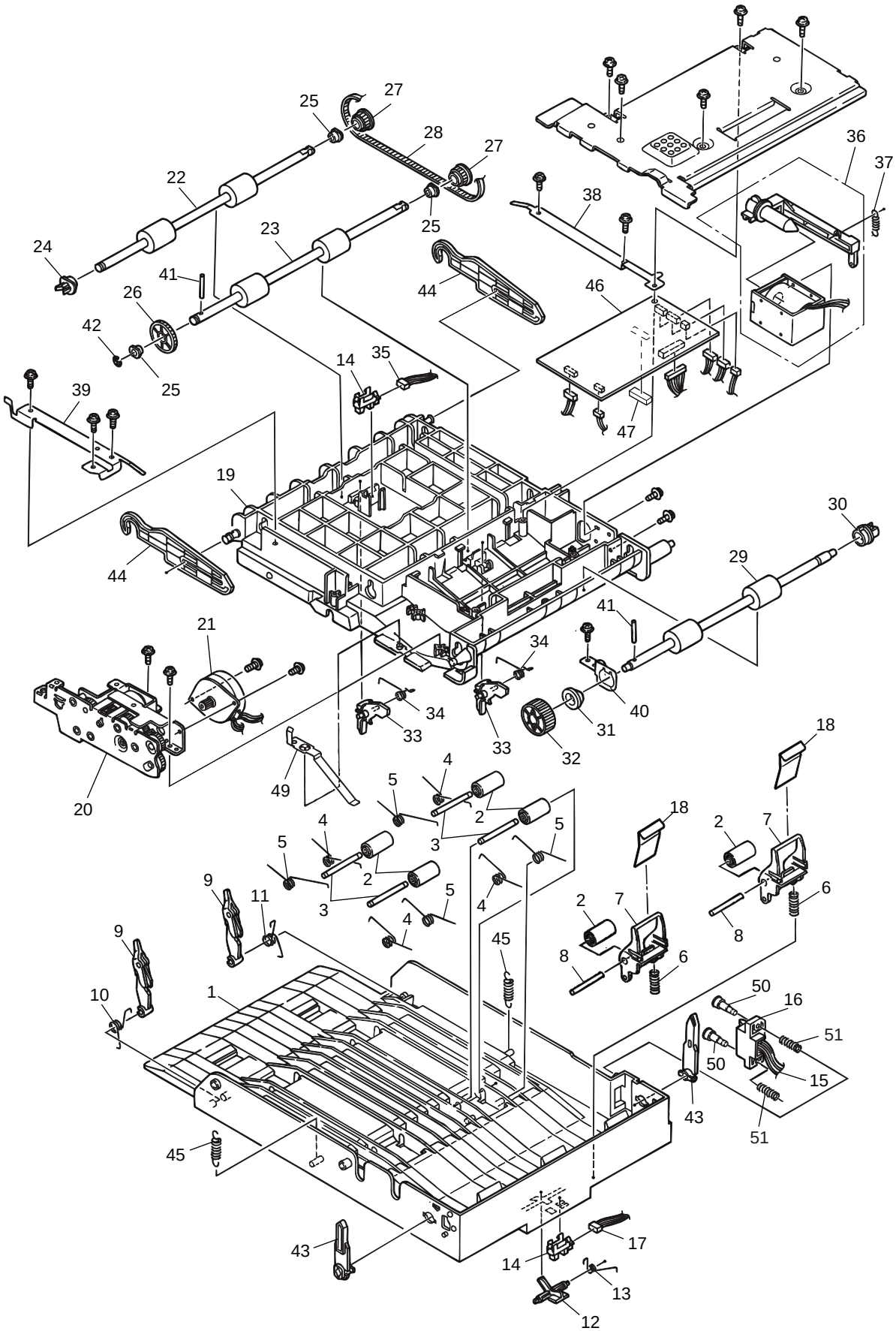

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Table 6-1 Duplex Unit(1/2)

No.	Parts No.	Name	Q'ty/U	Reccomended Q'ty			Remarks
				50	100	1000	
1	40658401	COVER-Upper(DUP)(Affix)	1	1	3	6	
2	40339401	ROLLER-Pinch	6	6	18	36	
3	40382201	SHAFT-Pinch	4	4	12	24	
4	40393201	SPRING-Pinch(U)	4	4	12	24	
5	40393202	SPRING-Pinch(U)	4	4	12	24	
6	40393301	SPRING-Pinch(R)	2	2	6	12	
7	40457701	BRACKET-Pinch(R)	2	2	6	12	
8	40457801	SHAFT-Pinch(R)	2	2	6	12	
9	40443801	LEVER-Lock Ass	2	2	6	12	
10	40541501	SPRING-Lock(frame)	1	1	3	6	
11	40541502	SPRING-Lock(frame)	1	1	3	6	
12	40338701	LEVER-Sensor(D-IN)	1	1	3	6	
13	40393601	SPRING-Sensor(D-IN)	1	1	3	6	
14	4YB4120-1137P001	FX50 Photo Sensor	2	2	6	12	
15	40598001	Core Assy.-DUPLEX	1	1	3	6	
16	2201000P0140	Connector(IMSA-9714N-14A)	1	1	3	6	
17	40375201	Connection Code-Wire	1	1	3	6	To IN Sensor
18	40461601	FILM-Pinch(R)	2	2	6	12	
19	40297201	FRAME-Main(DUP)	1	1	3	6	
20	40597501	GEAR Assy	1	1	3	6	
21	40921801	Motor-Pulse	1	1	3	6	
22	40381801	ROLLER-Feed(F)	1	1	3	6	
23	40381901	ROLLER-Feed(R)	1	1	3	6	
24	4PP4043-4489P001	Bearing-Feed	1	1	3	6	
25	4PP4076-3949P001	Bush	3	3	6	12	
26	40339901	GEAR-Z40S6	1	1	3	6	
27	40340301	PULLEY-MXL25	2	2	6	12	
28	40448101	Mini-Pitch Belt	1	1	3	6	
29	40382001	ROLLER-Feed(RV)	1	1	3	6	
30	4PP4076-5345P001	Bearing L	1	1	3	6	
31	4PP3527-5355P001	FX30 Bearing	1	1	3	6	
32	40339801	GEAR-Z48S8	1	1	3	6	
33	40338901	LEVER-Sensor(F/R)	2	2	6	12	
34	40386501	SPRING Sensor(F/R)	2	2	6	12	
35	40375301	Connection Code-Wire	1	1	3	6	To Front Sensor

Table 6-1 Duplex Unit(2/2)

No.	Parts No.	Name	Q'ty/U	Reccomended Q'ty			Remarks
				50	100	1000	
36	40483401	SOLENOID Ass	1	1	3	6	
37	40395501	SPRING-SL	1	1	3	6	
38	40382601	PLATE-Earth(F/R)	1	1	3	6	
39	40322901	PLATE-Earth(F/R-2)	1	1	3	6	
40	40382801	PLATE-Earth(BTM)	1	1	3	6	
41	NK2-12SUS	Knock Pin	2	2	6	12	
42	RE4-SK	E Ring	1	1	3	6	
43	40339102	LEVER-Lock(DUP)	2	2	6	12	# Color : Black
44	40338601	LEVER-Release(DUP)	2	2	6	12	
45	40393701	SPRING-Support	2	2	6	12	
46	40495804	Board-LEX	1	2	5	10	Without ROM
47	40942601	Program ROM(IC1)	1	2	5	10	
48	40318201	COVER-Bottom(DUP)	1	1	3	6	
49	40382701	Earth(MTR)	1	1	3	6	
50	41005501	STUD-CN	2	2	6	12	#
51	41005401	SPRING-CN	2	2	6	12	#

Appendix D SECOND/ THIRD PAPER FEEDER MAINTENANCE

1. OUTLINE

1.1 Functions

This high capacity second/ third paper feeder, which is located under the printer, rotates the hopping motor according to the signal from the printer to supply papers to the printer automatically.
The main functions are as followings:

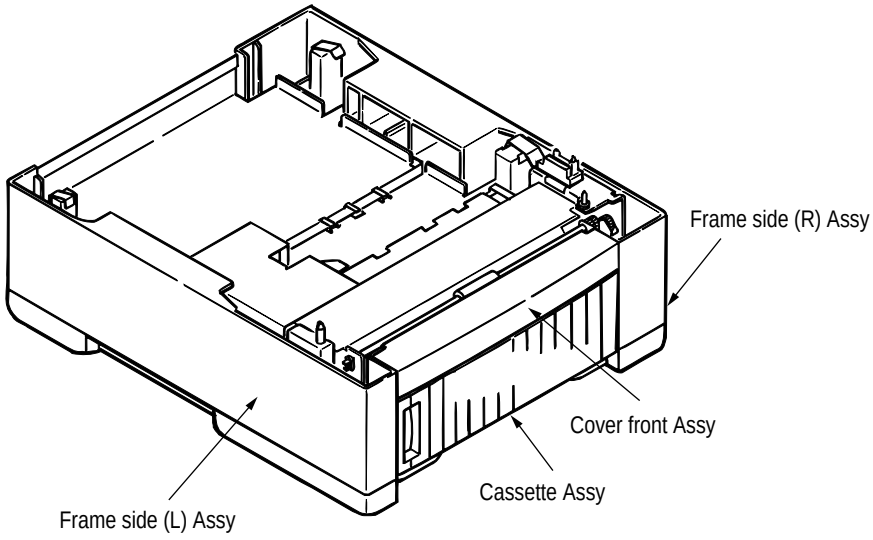
- Applicable media:

  [Paper Type]
  - Cut Sheet Size: A4, A5, B5, Letter, Executive, Legal13, Legal14
  - Special Size: Paper Width: 148 to 216mm
    Paper length: 210 to 356mm

  [Weight]
  - 60 ~ 105 g/m^2

- Paper loading capacity: 75 g/m^2 paper 530 sheets

1.2 Appearance and Parts Name



2. DESCRIPTION OF OPERARTION

2.1 Driving Mechanism

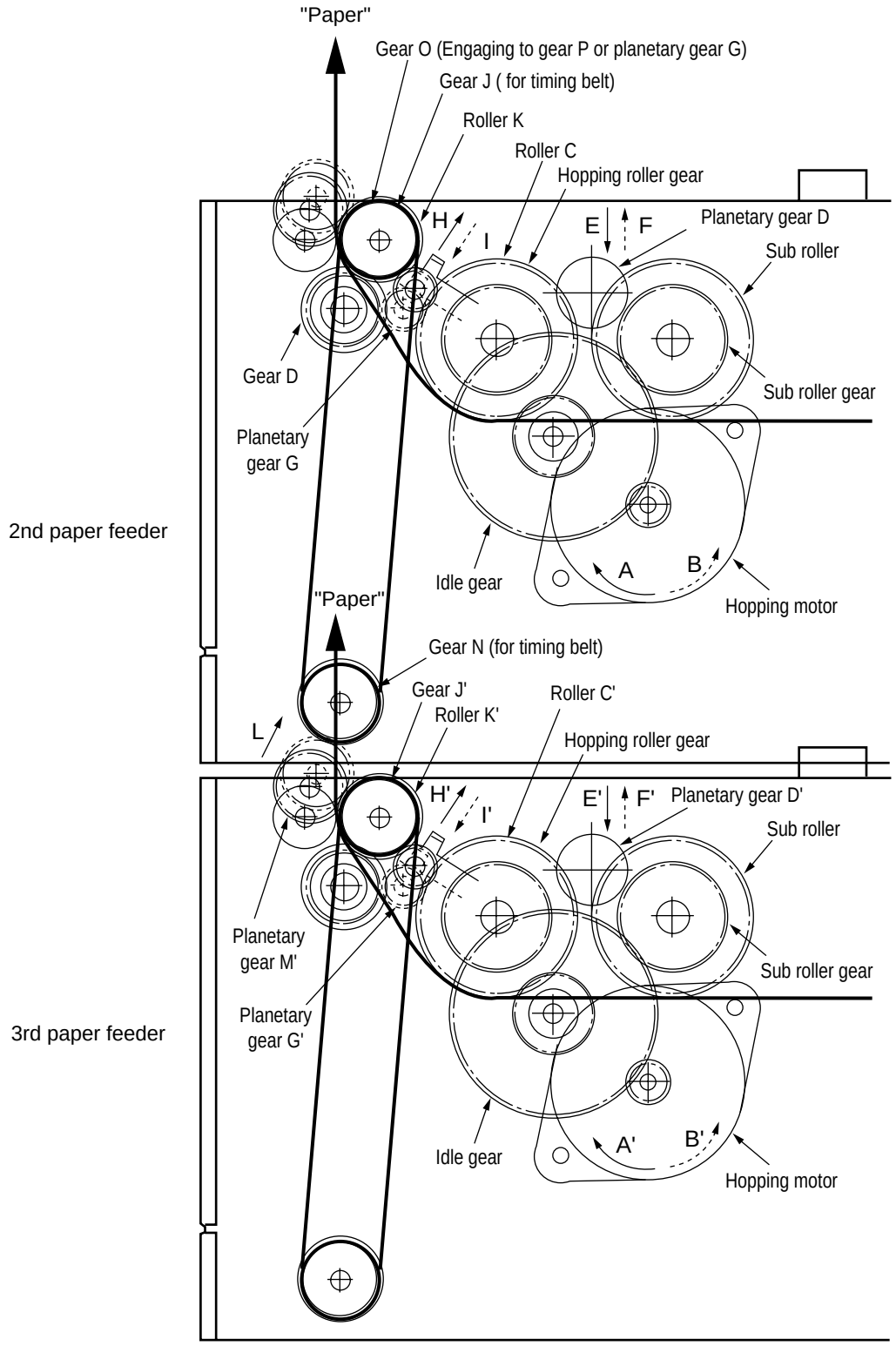
The high-capacity second/ third paper feeder only a top paper which is set in the cassette by a signal from the printer.

(1) Second paper feeder as an example is shown.
First of all, the hopping motor rotates in the direction of arrow A. Roller C rotates by way of idle gear on the same shaft on which the hopping gear is placed. At the same time,the planetary gear D shifts in the direction of arrow E and a sub roller gear and a sub roller on the same shaft rotate. Roller C and sub roller make a paper hop. Also, the planetary gear G shifts in the direction of arrow H and Roller K rotates, and when the length of sheet is legal 13 inch or more, a hopping paper will be impinged to the regist roller within the printer. When the length of paper is A4 or less, hopping papers will be carried until the defined amount.

(2) When the length of paper is A4 or less, the hopping roller rotates in the direction of arrow B next. At this time, the planetary gear G shifts in the direction of arrow I to rotate Roller K and impinge the papers, which are carried to the defined amount, to the regist roller within the printer. During the hopping roller is rotating, Roller C is racing because it includes one-way bearing. At the same time, planetary gear D shifts in the direction of arrow F and the sub roller gear and another sub roller on the same shaft won't rotate.

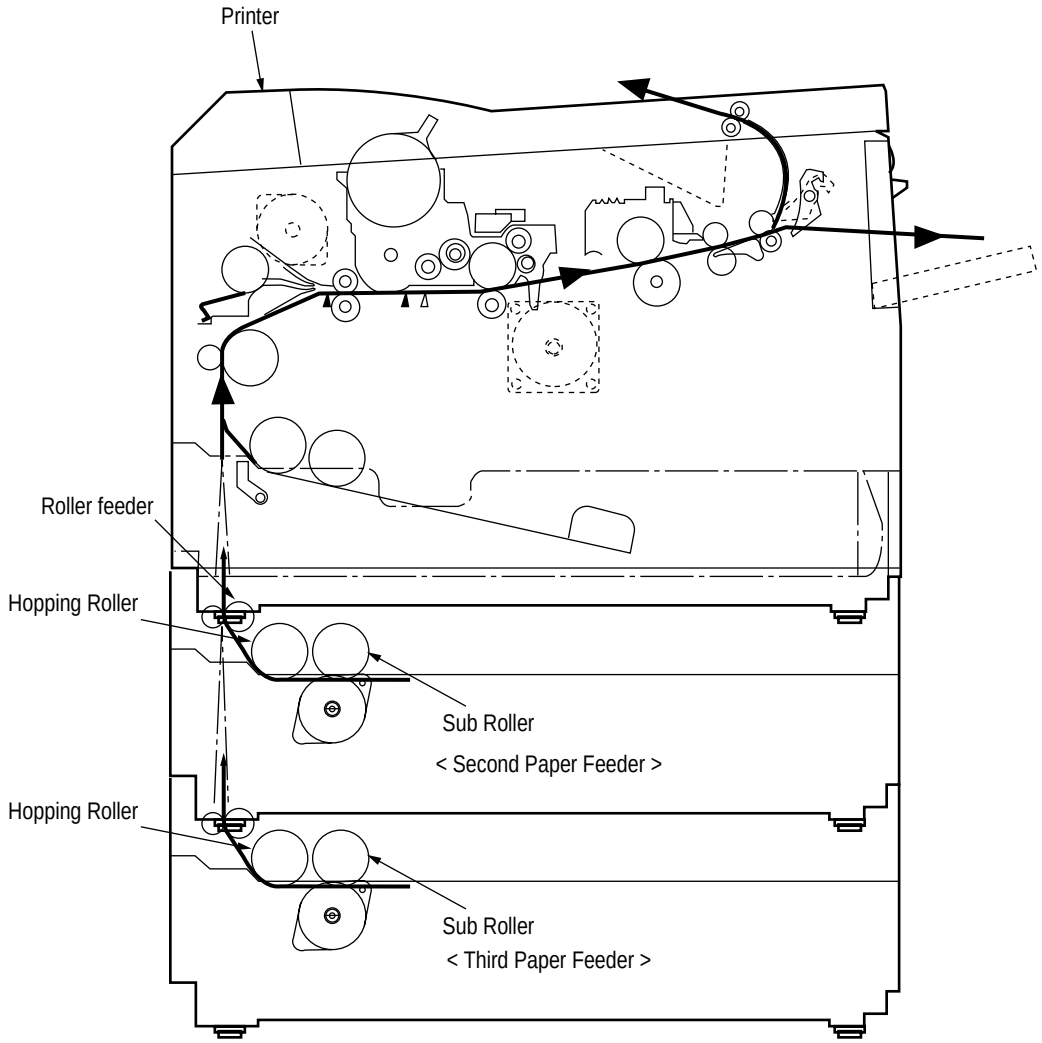
(3) In the third paper feeder, when the length of paper is legal 13 inch or more, and if the rotating direction is arrow A', papers will be carried to the defined amount without being impinged to the regist roller, and then the rotating direction of the hopping roller will be changed to arrow B'. When the rotating direction of the hopping roller A' arrow direction, the motion is same as (1). When B' arrow direction, the motion will be same as (2) until Roller K' begin to rotate. The planetary gear M' will shift in the direction of arrow L by way of the gear O' which begin to rotate at the same time when the roller K' does. And gear N rotates, resulting in rotating the gear J and roller K on the same shaft, and impingeing papers to the regist roller within the printer. At this time, as the gear O and gear P engaged by the planetary gear G on the same shaft, on which the gear J and roller K are placed, includes an one-way clutch gear, the planetary gear G won't rotate.

Impinged papers are, afterwards, fed by the control of printer's inside.


"Paper"
Gear O (Engaging to gear P or planetary gear G)
Gear J (for timing belt)
Roller K
Roller C
Hopping roller gear
H
I
E
F
Planetary gear D
Sub roller
Gear D
Sub roller gear
Planetary gear G
2nd paper feeder
Idle gear
A
B
Hopping motor
"Paper"
Gear N (for timing belt)
Gear J'
Roller C'
Roller K'
L
Hopping roller gear
H'
I'
E'
F'
Planetary gear D'
Sub roller
Planetary gear M'
Sub roller gear
Planetary gear G'
3rd paper feeder
Idle gear
A'
B'
Hopping motor

2.2 Hopper Mechanism

The hopper is a motion where papers are automatically sent into the printer one by one. When papers are set to the cassette, the feeding motion is activated by the hopping motor to send only a top paper which is caught on the brake shoe.



3. PARTS REPLACEMENT

In this section, the removing and installing procedure of assembly and unit in field are described. Although this section describes the removing procedure, the installing procedure is basically to conduct the removing one in reverse.

3.1 Precautions Concerning Parts Replacement

(1) Parts replacements must be carried out, by first turning the printer power switch off “O” and removing the High Capacity Second / Third Paper Feeder from the printer.

(2) Do not disassemble the Second/Third Paper Feeder if it is operating normally.

(3) Establish the extent of disassembly suitable for the purpose of the procedure, and do not disassemble any more than necessary.

(4) Only specified service tools may be used.

(5) Disassembly must be carried out according to the prescribed procedures. Parts may be damaged if such procedures are not followed.

(6) Small parts such as screws and collars can easily be lost, therefore these parts should be temporarily fixed in the original location.

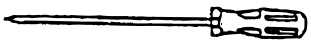
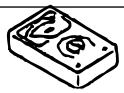
(7) When handling printed circuit boards, do not use any glove which may generate static electricity.

(8) Do not place the printed circuit boards directly on the equipment or floor.

[Service Tools]

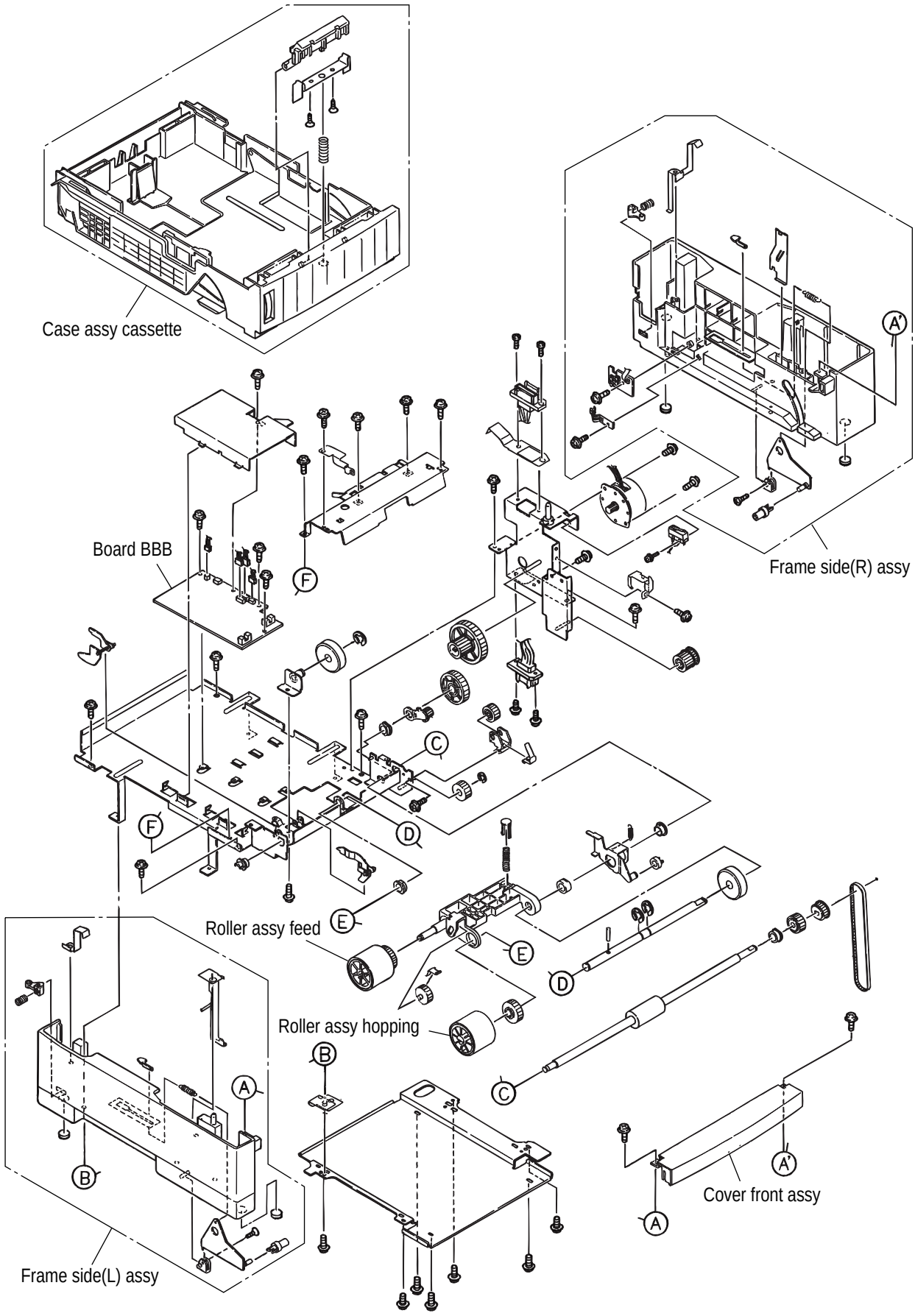
Table 3-1 shows the tools required for the replacement of printed circuit boards and units in the field.

Table 3-1 Service Tools

No.	Service Tools		Q'ty	Place of use	Remarks
1		No. 1-100 Philips screwdriver	1	2~2.5 mm screws	
2		No. 2-100 Philips screwdriver	1	3~5 mm screws	
3		No. 3-100 screwdriver	1		
4		No. 5-200 screwdriver	1		
5		Digital multimeter	1		
6		Pliers	1		
7		Handy cleaner	1		
8		Connector remover OKI P/N: 4PP4076-5395P1	1		

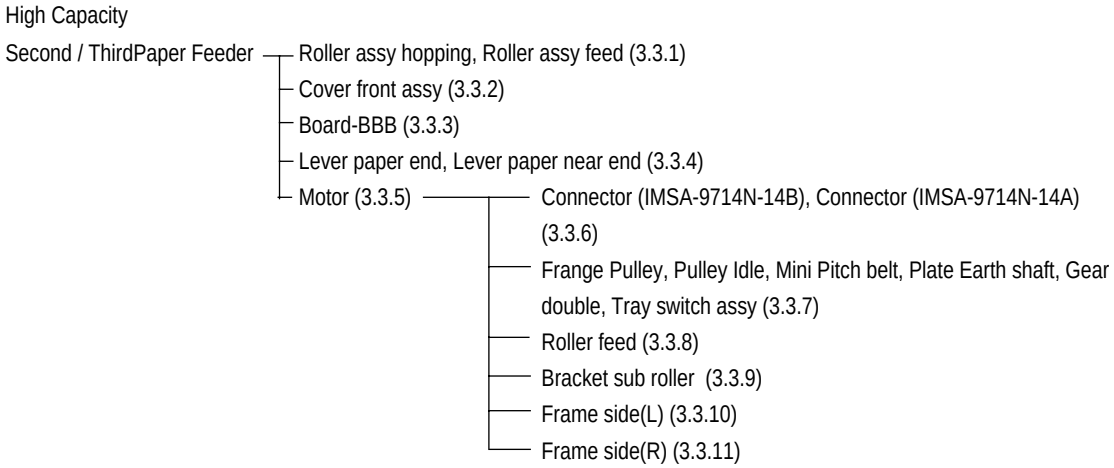
3.2 Parts Layout

This section describes the layout of the main components.



3.3 Parts Replacement Methods

This section describes the parts replacement methods for the components listed in the disassembly order diagram below.

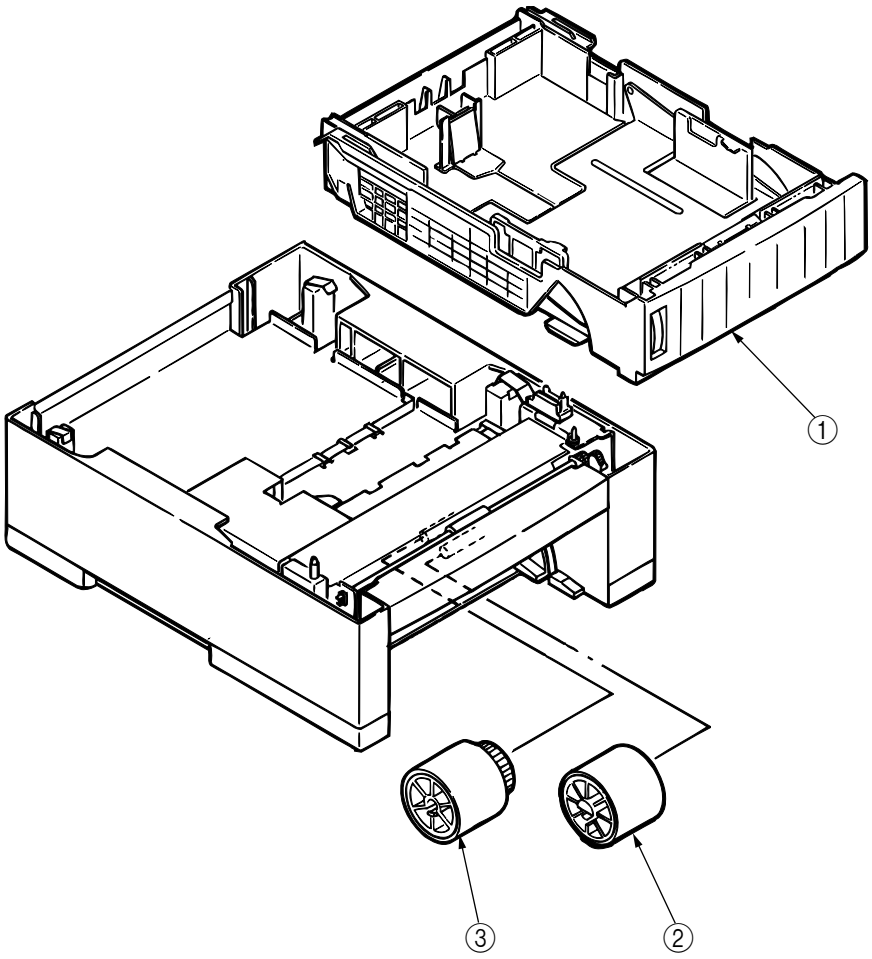

High Capacity
Second / ThirdPaper Feeder
Roller assy hopping, Roller assy feed (3.3.1)
Cover front assy (3.3.2)
Board-BBB (3.3.3)
Lever paper end, Lever paper near end (3.3.4)
Motor (3.3.5)
Connector (IMSA-9714N-14B), Connector (IMSA-9714N-14A) (3.3.6)
Frange Pulley, Pulley Idle, Mini Pitch belt, Plate Earth shaft, Gear double, Tray switch assy (3.3.7)
Roller feed (3.3.8)
Bracket sub roller (3.3.9)
Frame side(L) (3.3.10)
Frame side(R) (3.3.11)

3.3.1 Roller assy hopping, Roller assy feed

(1) Remove the Case assy cassette ①.

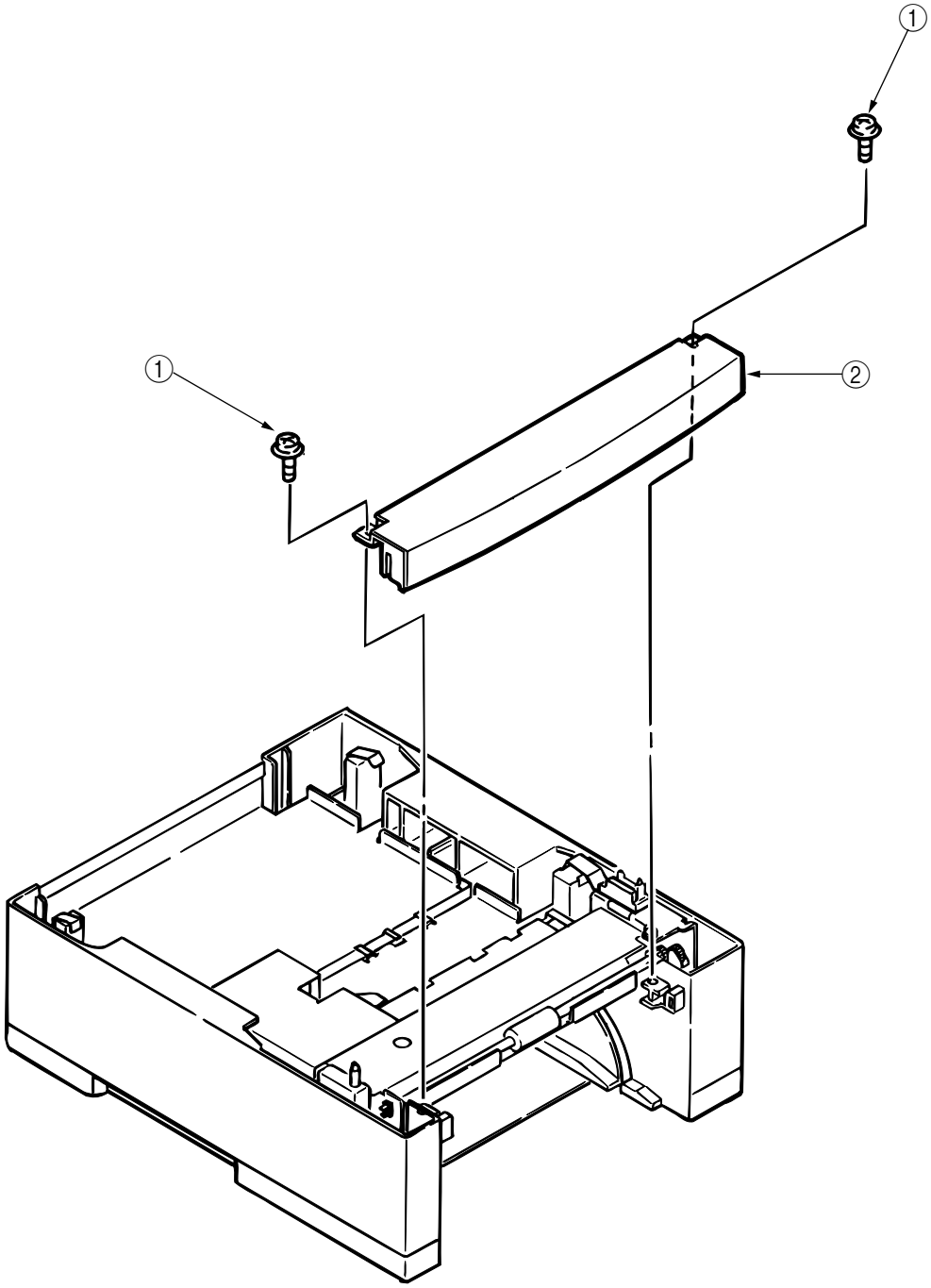
(2) Disengage latchs to remove the Roller assy hopping ②.

(3) Disengage latchs to remove the Roller assy feed ③.



3.3.2 Cover front assy

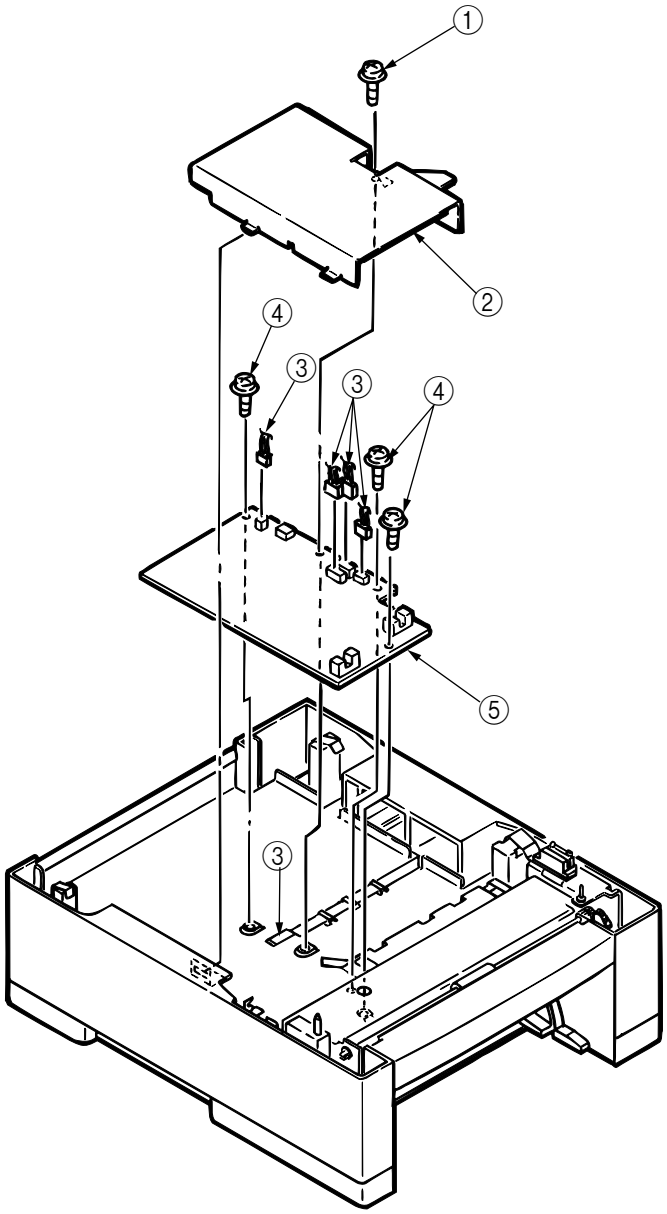
(1) Unscrew two screws ① to remove the Cover front assy ②.



3.3.3 Board-BBB

(1) Unscrew a screw ① to remove the PCB cover bracket ②.

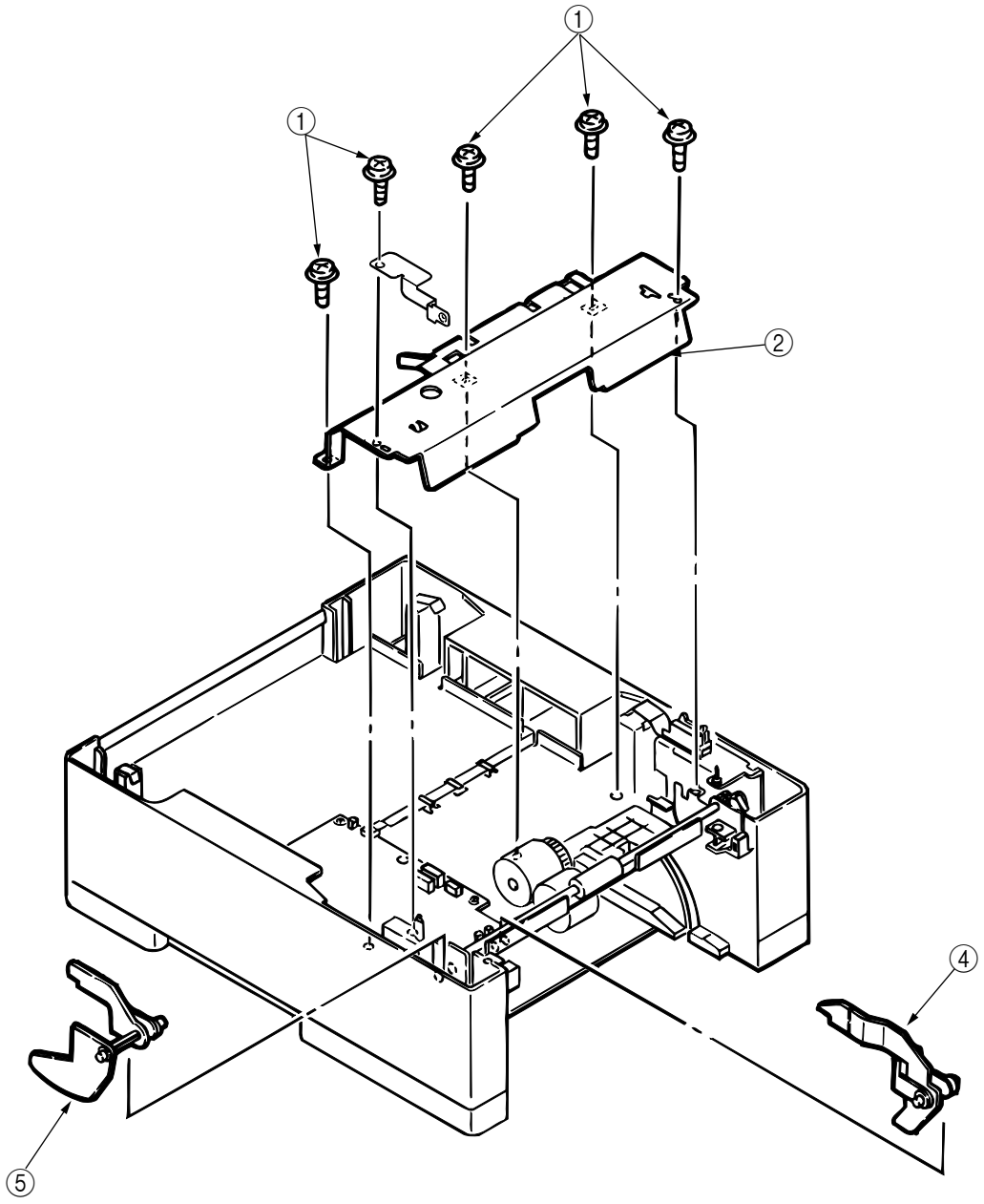
(2) Take away all connectors ③ and three screws ④ to remove the Board-BBB ⑤.



3.3.4 Lever paper end, Lever paper near end

(1) Unscrew five screws ① to remove roller cover bracket ② and PLATE-Earth (L) ③.

(2) Disengage latches to remove the Lever paper end ④ and Lever paper near end ⑤.



3.3.5 Motor

(1) Remove the Cover front assy (See section 3.3.2).

(2) Remove the PCB cover bracket (See section 3.3.3).

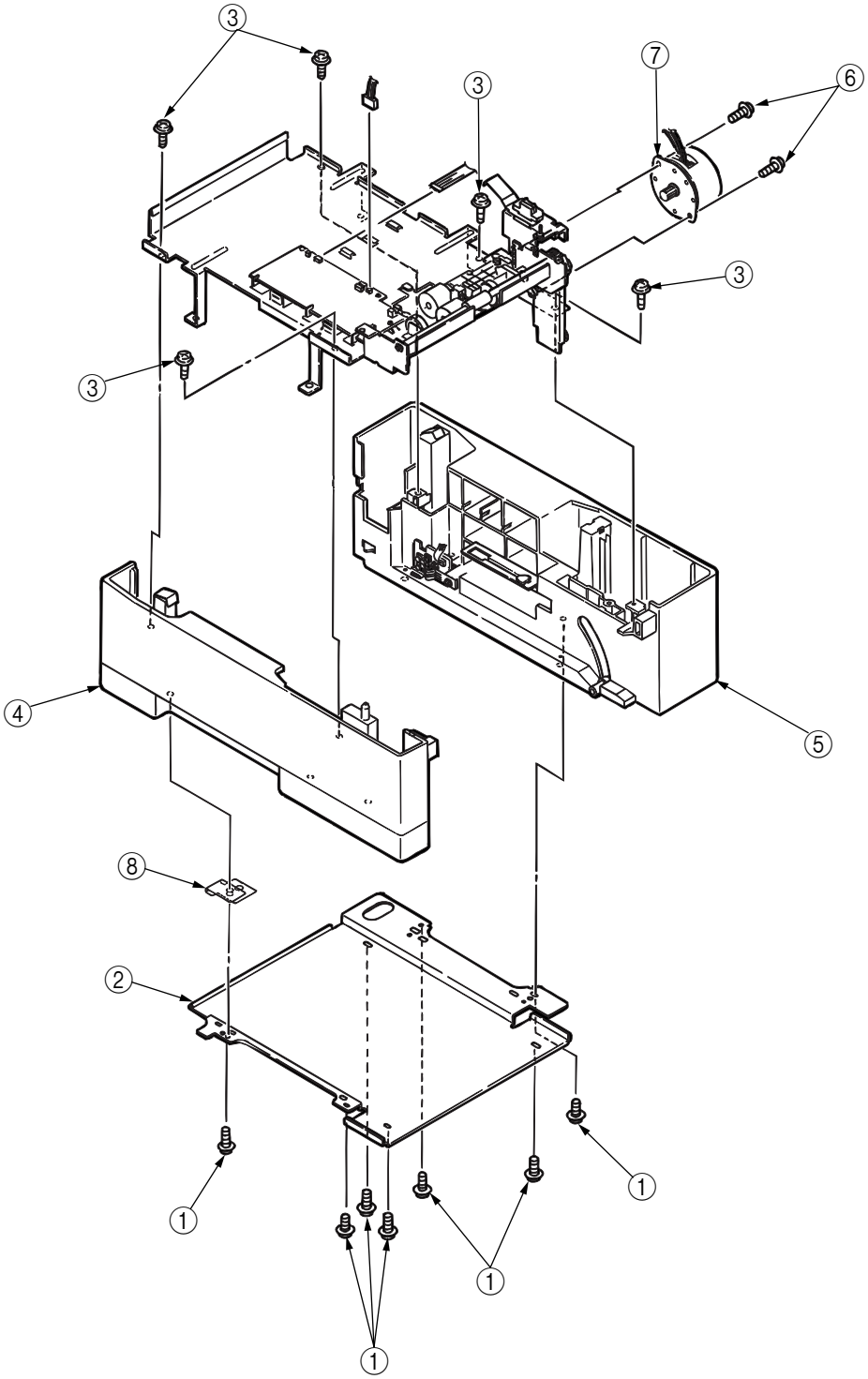
(3) Remove the roller cover bracket (See section 3.3.4).

(4) Unscrew seven screws ① to remove the bottom bracket ②.

(5) Unscrew five screws ③ to remove the Frame side (L) assy ④ and Frame side (R) ⑤.

(6) Take away two screws ⑥ and connector to remove the Motor ⑦.

(7) Remove the Plate-Earth ⑧.

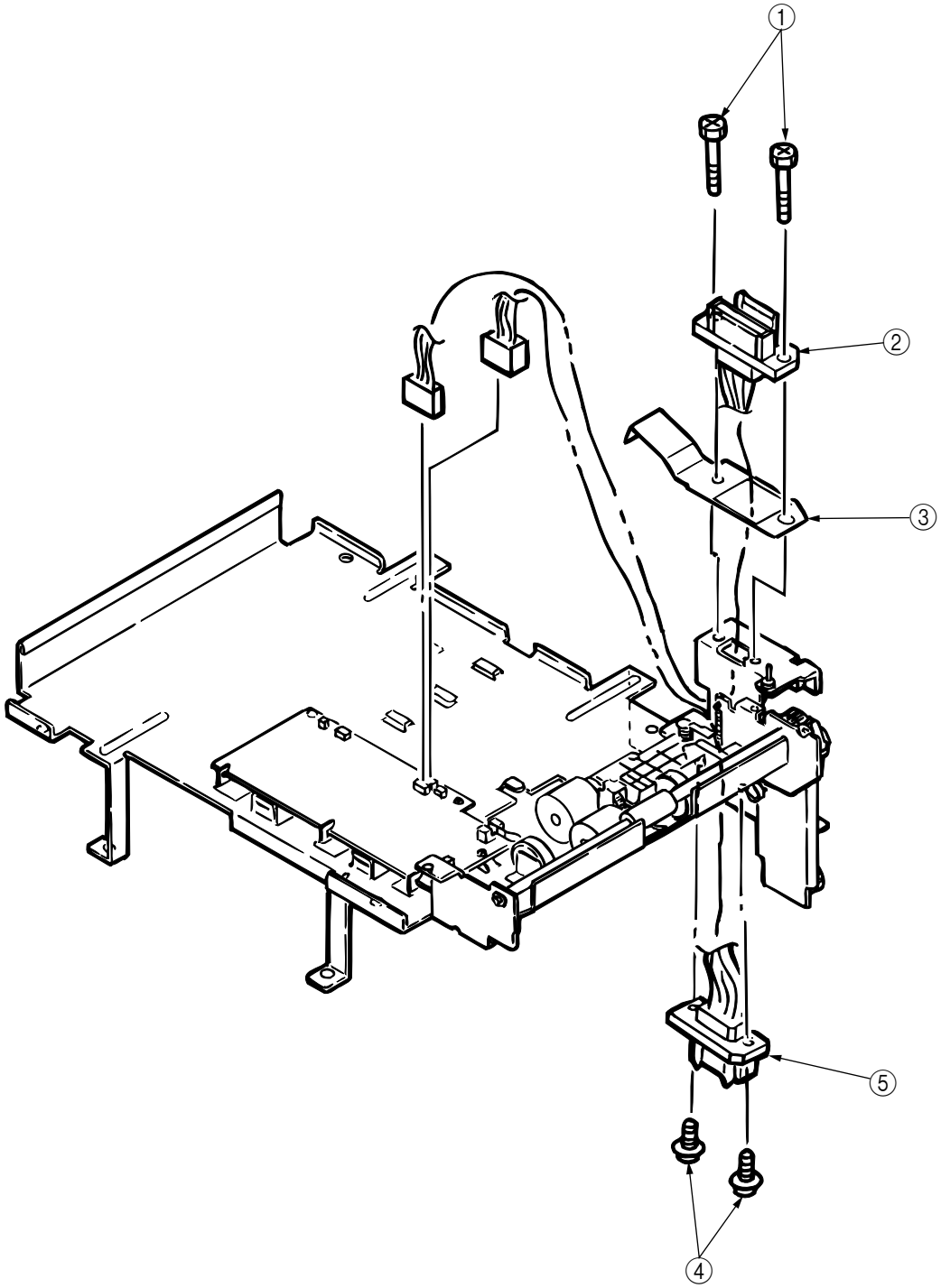


3.3.6 Connector (IMSA-9714N-14B), Connector (IMSA-9714N-14A)

(1) Remove the Motor (See section 3.3.5).

(2) Unscrew two screws ① to remove Connector (IMSA-9714N-14B) ② and Plate-Earth (FR) ④.

(3) Unscrew two screws ④ to remove the connector (IMSA-9714N-14A) ⑤.



3.3.7 Frange pulley, pulley Idle, Mini pitch belt, Plate Earth shaft, Gear double, Tray switch assy

(1) Remove the Motor (See section 3.3.5).

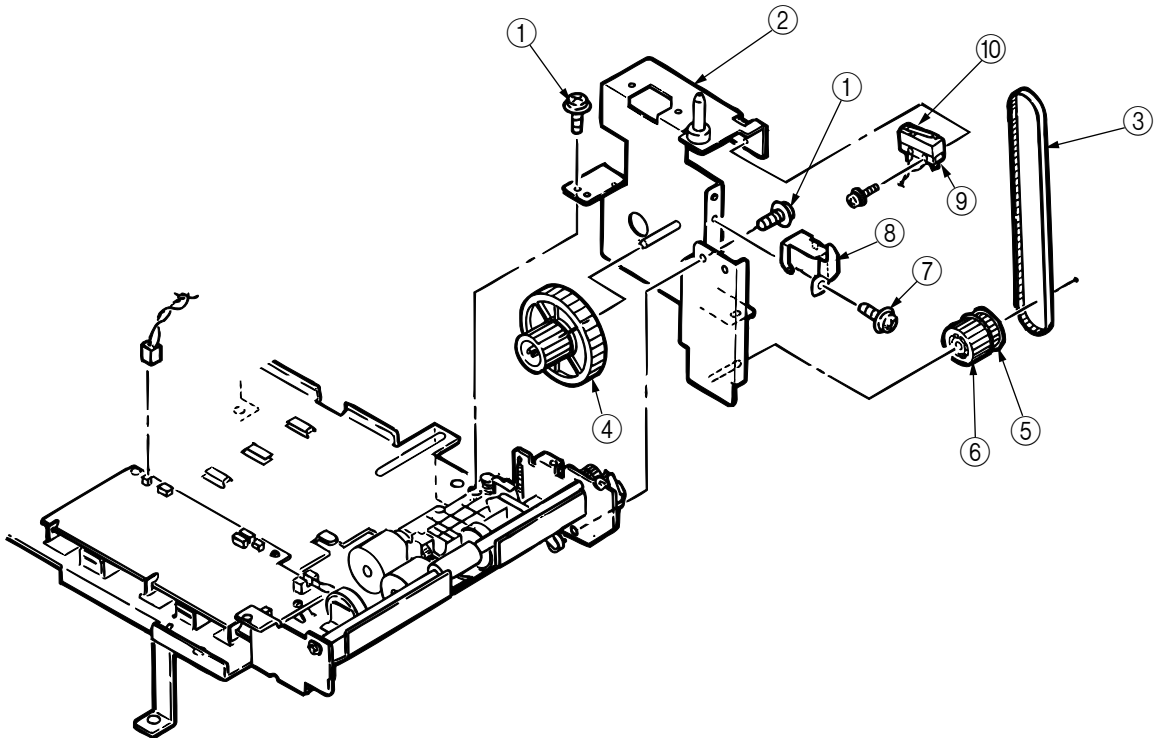
(2) Remove the Connector (See section 3.3.6).

(3) Unscrew two screws ① to remove the motor bracket ②.
(At this time, the Mini pitch belt ③ and Gear double ④ can be removed simultaneously.)

(4) Disengage latchs to remove the Frange pulley ⑤ and pulley Idle ⑥.

(5) Unscrew a screw ⑦ to remove the Plate Earth shaft ⑧.

(6) Unscrew a screw ⑨ to remove the Tray switch assy ⑩.



3.3.8 Roller feed

(1) Remove the Motor (See section 3.3.5).

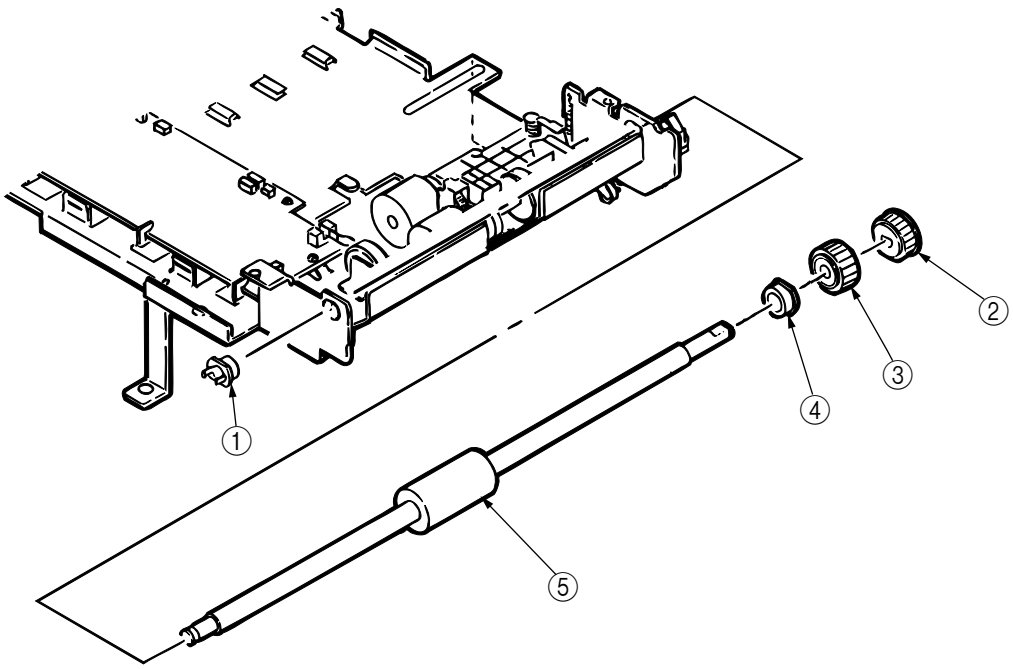
(2) Remove the Connector (See section 3.3.6).

(3) Remove the motor bracket (See section 3.3.7).

(4) Disengage latchs to remove the Feeding bearing ①.

(5) Disengage latchs to remove the Pulley feed ②.
(At this time, the Gear feed ③ and Bush ④ can be removed simultaneously.)

(6) Remove the Roller feed ⑤.



3.3.9 Bracket sub roller

(1) Remove the Roller assy hopping and Roller assy feed. (See section 3.3.1).

(2) Remove the Roller feed (See section 3.3.8).

(3) Unscrew a screw ① to remove the Bracket joint ② , Spring joint ③ and Gear joint ④.

(4) Take away the E-ring ⑤ to remove the Gear hopping ⑥.

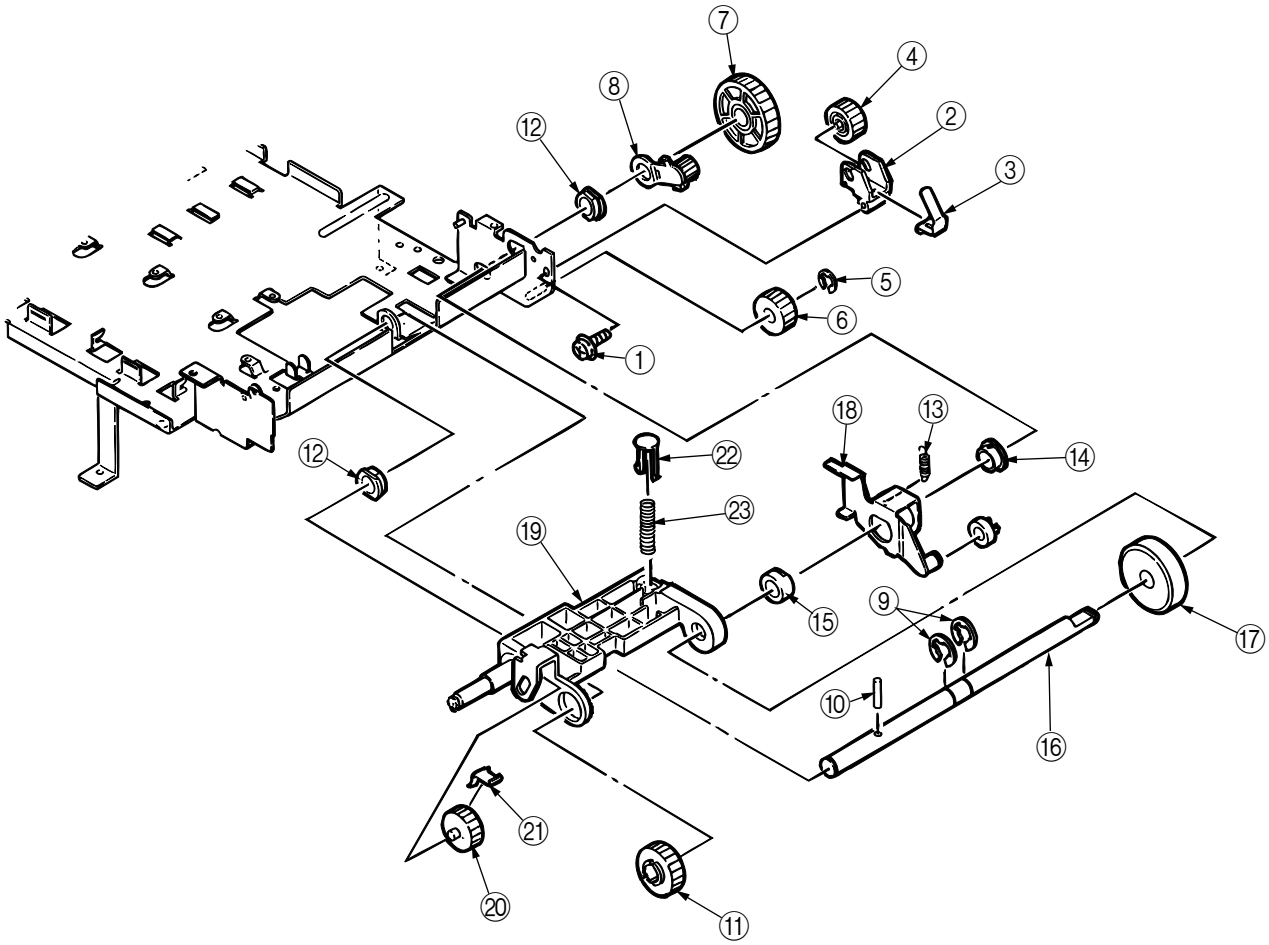
(5) Disengage latchs to remove the Gear hopping (2nd) ⑦.
(At this time, the Bracket planet assy ⑧ can be removed simultaneously.)

(6) Take away two E-ring ⑨ and pull out the Knock pin ⑩ to remove the Gear Z38 ⑪.

(7) Remove two ADF bearing ⑫ , Spring release ⑬ , Bearing F ⑭ and Space hopping shaft ⑮ and remove the Shaft hopping ⑯ , Guide roller ⑰ , Lever release assy ⑱ and Bracket sub roller ⑲.

(8) Take away the Gear planet (z28) ⑳ to remove the Planet plate ㉑.

(9) Take away the Bracket spring (sub) ㉒ to remove the Spring sub ㉓.



3.3.10 Frame side (L) assy

(1) Remove the Frame side (L) assy (See section 3.3.5).

(2) Remove the Plate Earth (BL) ①.

(3) Take away the Spring ② to remove the Cassette stopper ③.

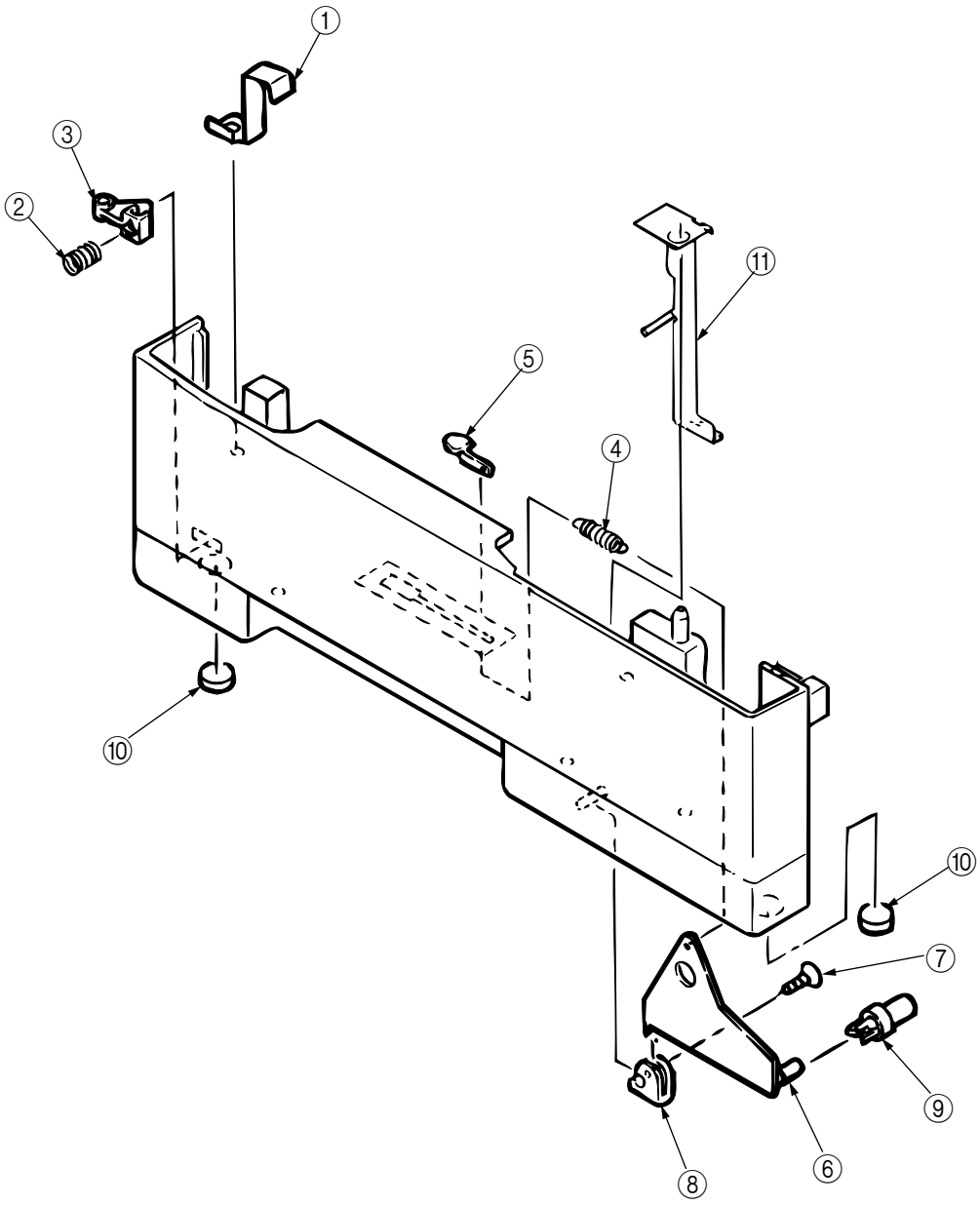
(4) Take away the Spring sheet ④ to remove the Pull block ⑤.
(At this time, Lever link ⑥ can be removed simultaneously.)

(5) Unscrew a screw ⑦ to remove the Link support ⑧.

(6) Remove the Roller link ⑨.

(7) Remove the Plate-Earth ⑪.

(8) Remove two Rubber foot ⑩.



3.3.11 Frame side (R) assy

(1) Remove the Frame side (R) assy (See section 3.3.5).

(2) Remove the Plate Earth (BR) ①.

(3) Take away the Spring ② to remove the Cassette stopper ③.

(4) Take away the Spring sheet ④ to remove the Pull block ⑤.
(At this time, Lever link ⑥ can be removed simultaneously.)

(5) Unscrew a screw ⑦ to remove the Link support ⑧.

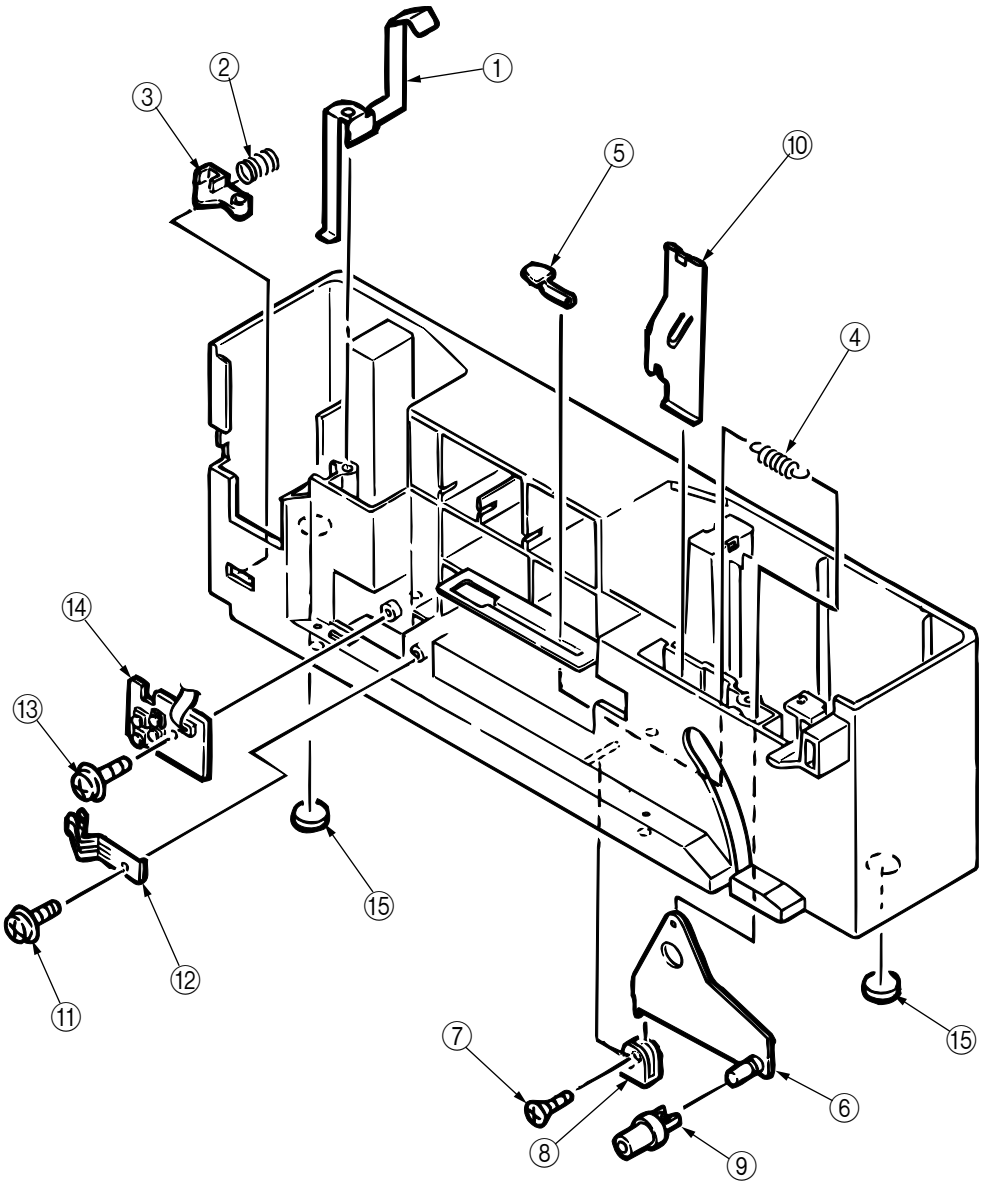
(6) Remove the Roller link ⑨.

(7) Remove the Plate earth ⑩.

(8) Unscrew a screw ⑪ to remove the Detector spring ⑫.

(9) Unscrew a screw ⑬ to remove the Board-PXC ⑭.

(10) Remove two Rubber foot ⑮.



4. TROUBLESHOOTING

4.1 Precautions Prior to the Troubleshooting

(1) Go through the basic checking items provided in the Operator Guide.

(2) Obtain detailed information concerning the problem from the user.

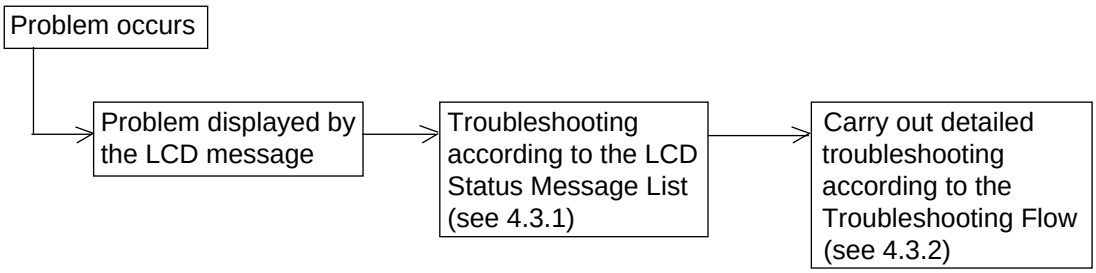
(3) Go through the checking in the conditions similar to that in which the problem occurred.

4.2 Preparations for the Troubleshooting

(1) Display on the Operator panel
The status of the problem is displayed on the LCD (Liquid Crystal Display) on the Operator panel. Go through the appropriate troubleshooting procedures according to the messages displayed on the LCD.

4.3 Troubleshooting Method

When a problem occurs, go through the troubleshooting according to the following procedure.


Problem occurs
Problem displayed by the LCD message
Troubleshooting according to the LCD Status Message List (see 4.3.1)
Carry out detailed troubleshooting according to the Troubleshooting Flow (see 4.3.2)

4.3.1 LCD Status Message List

The listing of the statuses and problems displayed in the form of messages on the LCD is provided in Table 4-1.

Table 4-1

Classification	LCD Status Message	Description	Recovery method
Jam error	PAPER INPUT JAM CHECK TRAY * PAPER FEED JAM CHECK TRAY *	Notifies of occurrence of jam while the paper is being fed from the Second / third Paper Feeder	• Check the paper in the Second / third Paper Feeder. Carry out the recovery printing by opening the cover, removing jammed paper and closing the cover, and then turning the error display off. • When the problem occurs frequently, to through the Troubleshooting.
Paper size error	ERROR PAPER SIZE CHECK TRAY *	Notifies of incorrect size paper feeding from the Second / third Paper Feeder.	• Check the paper in the Second / third Paper Feeder. Also check to see if there was a feeding of multiple sheets. Carry out the recovery printing by opening the cover, removing paper and closing the cover, and then turning the error display off.
Tray paper out	PAPER OUT mmmmmmmmTRAY* mmmmmmmm: Paper size in the tray being selected	Notifies of no paper or paper cassette state of the Second / third Paper Feeder.	• Load the paper or paper cassette in the Second / third Paper Feeder.
Interface Timeout	ERROR 81	Notifies of occurrence of interface timeout between the printer and the Second / third Paper Feeder.	• Verify connection of Board-BBB and square-shaped connector. Replace the square-shaped connector if necessary. • Replace Board-BBB.

* : 2 or 3

4.3.2 Troubleshooting Flow

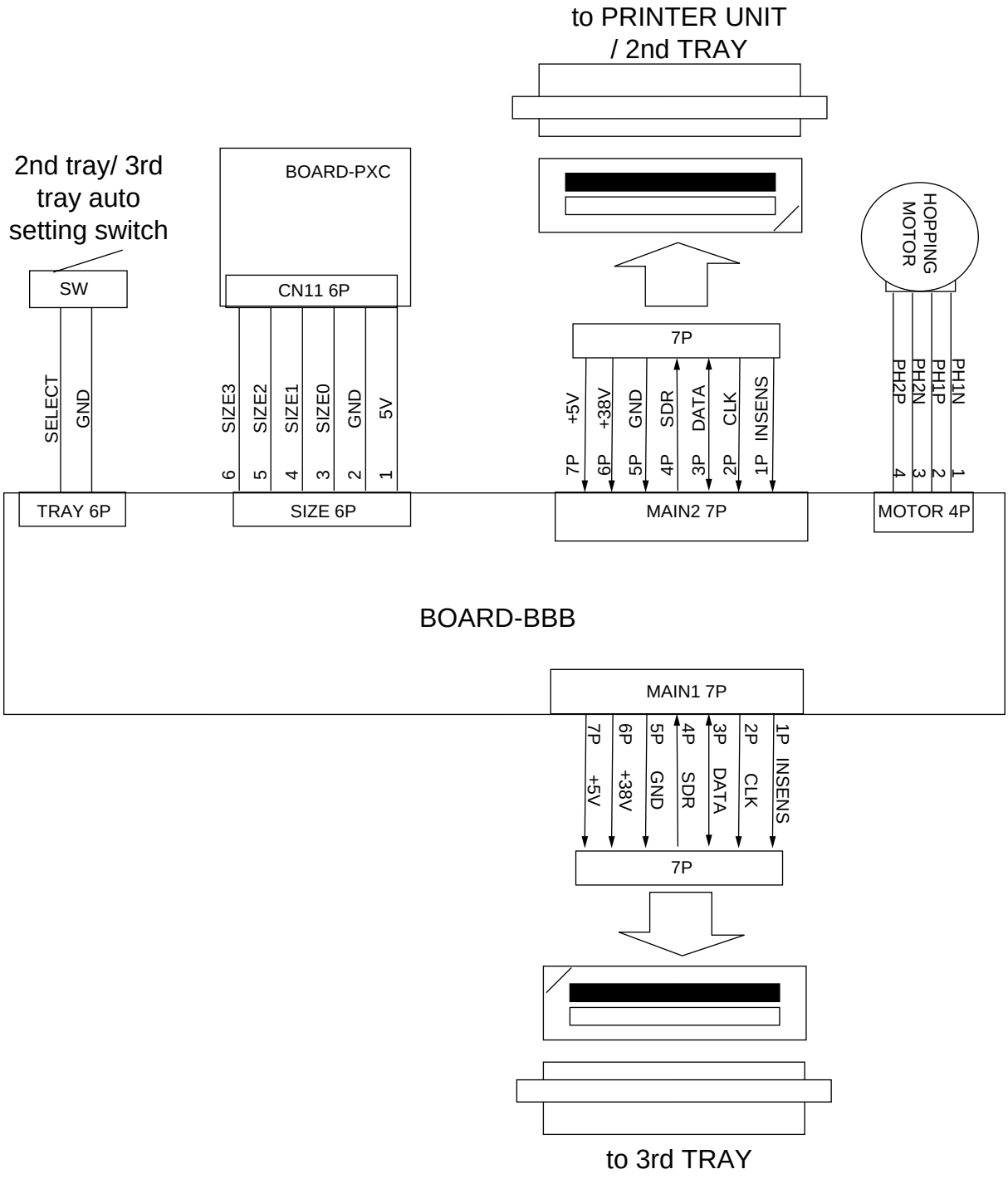
• (JAM error)

Paper Input Jam

- Does paper jam at the inlet when the power is turned on?
  - YES Is the paper located above the inlet sensor lever?
    - YES Remove the paper.
  - NO Is the inlet sensor lever operating normally?
    - NO Replace the inlet sensor lever.
  - YES Clean the inlet sensor 1 on the power supply unit (High Voltage) or replace the power supply unit (High Voltage). (See Fig.2.3 Sensor Layout Diagram)
- NO When the paper is fed in, does the paper input jam occur?
  - YES Is the paper being fed to above the inlet sensor lever?
    - YES Is the inlet sensor lever operating normally?
      - NO Replace the inlet sensor lever.
    - YES Clean the inlet sensor 1 on the power supply unit (High Voltage) or replace the power supply unit (High Voltage). (See Fig.2.3 Sensor Layout Diagram)
  - NO Replace the hopping roller shaft assy or paper cassette.
- NO Is the hopping roller shaft rotating?
  - YES Set the paper properly.
- NO Is the stepping motor turning?
  - YES Replace the one-way clutch gear on the hopping roller shaft assembly.
- NO Is the connector cable being connected properly?
  - NO Connect the connector cable properly.
- YES Check the coil resistance (approx. 6.7Ω) of the stepping motor. Is it normal?
  - NO Replace the stepping motor.
- YES Replace the Board-BBB.

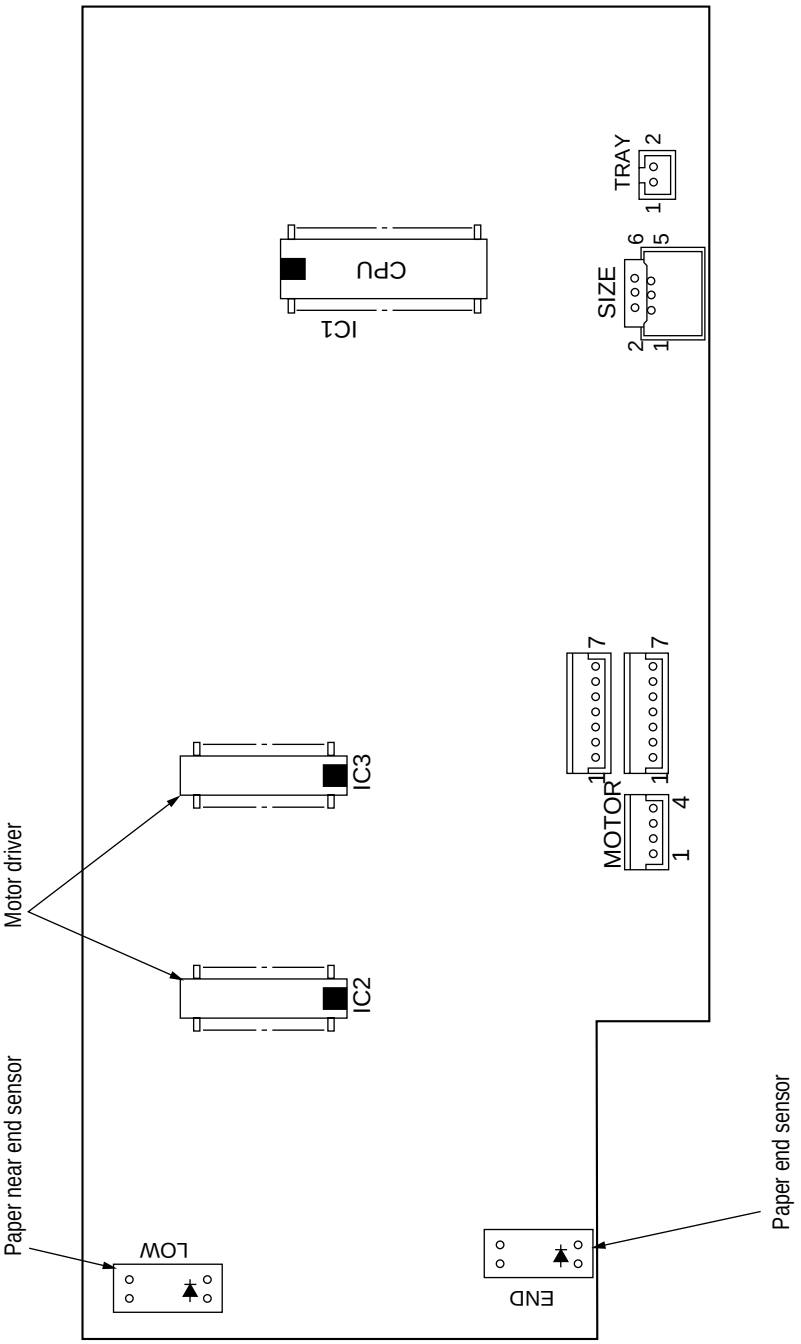
5. CONNECTION DIAGRAM

5.1 Interconnection Diagram



5.2 PCB Layout

BBB-PCB



6. PARTS LIST

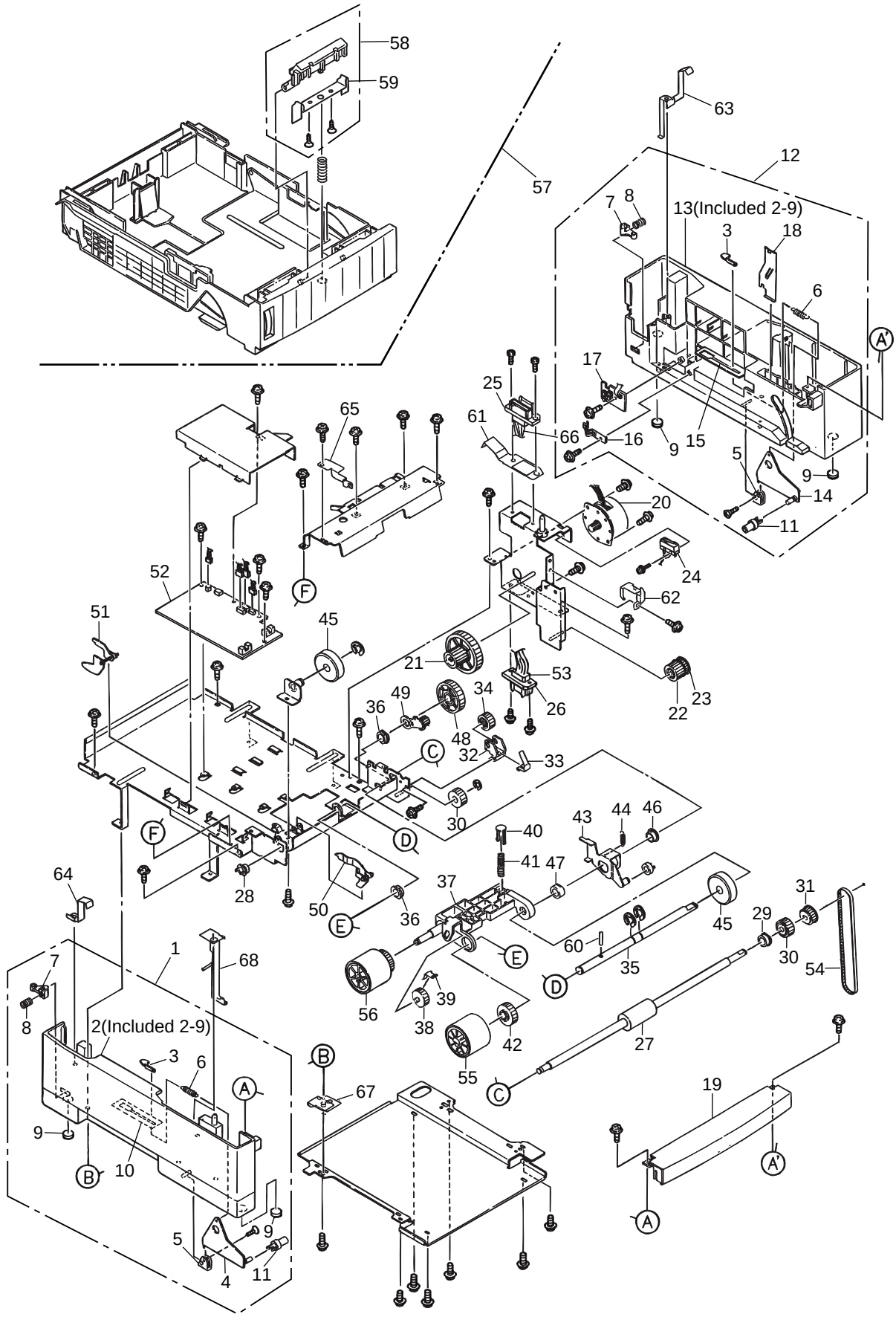

58
59
57
63
12
13(Included 2-9)
7
8
3
18
6
A'
17
25
61
66
16
9
15
5
9
14
11
20
24
62
65
52
F
51
45
21
53
26
22
23
49
36
34
48
C
32
33
30
D
F
28
50
E
36
37
40
41
47
43
44
46
45
29
30
31
54
60
35
E
D
64
1
68
7
8
2(Included 2-9)
3
6
A
9
B
10
56
39
38
42
55
27
C
B
67
19
A'
A
5
9
11
4

Table 6-1 High Capacity Second/ Third Paper Feeder (1/2)

No.	Parts No.	Name	Q'ty/U	Reccomended Q'ty			Remarks
				50	100	1000	
1	40346701	Frame side(L)assy	1	1	3	6	#
2	40488701	Guide cassette L	1	1	3	6	For Maintenance
3	4PP4122-1217P001	Pull block	2	2	6	12	
4	40349102	Lever link(Caulking)	1	1	3	6	
5	4PP4076-5358P001	Link support	2	2	6	12	
6	40928101	Spring-Sheet	2	0	6	12	#
7	4PP4076-5359P001	Cassette stopper	2	2	6	12	
8	4PP4043-4526P001	Spring	2	0	6	12	
9	4PB4016-1960P002	Rubber foot	4	4	12	24	
10	3PP4076-5714P001	Guide rail plate L	1	1	3	6	
11	40349701	Roller link	2	2	3	12	
12	40346801	Frame side(R)assy	1	1	3	6	
13	40488801	Guide cassette R	1	1	3	6	For Maintenance
14	40349101	Lever link(Caulking)	1	1	3	6	
15	3PP4076-5715P001	Guide rail plate R	1	1	3	6	
16	4PP4076-5360P001	Detector spring	1	1	3	6	
17	40368303	Board-PXC-3	1	1	3	6	
18	40433001	Plate earth(R)	1	1	3	6	
19	40347001	Cover front assy	1	1	3	6	
20	40366501	Motor	1	1	3	6	
21	40247001	Gear double	1	1	3	6	
22	40348301	Pulley Idle	1	1	3	6	
23	40422101	Flang pulley	1	1	3	6	
24	40444301	Tray switch assy	1	2	6	12	
25	2201000P0141	Connector (IMSA-9714N-14B)	1	0	3	6	To Printer or 2nd Tray
26	2201000P0140	Connector (IMSA-9714N-14A)	1	0	3	6	To 3rd Tray
27	40247301	Roller feed	1	1	3	6	
28	4PP4043-4489P001	Feeding bearing	1	1	3	6	
29	4PP4076-3949P001	Bush	1	1	3	6	
30	40247101	Gear feed	2	2	6	12	
31	40247201	Pulley feed	1	1	3	6	
32	40247801	Bracket joint	1	1	3	6	
33	40433401	Spring joint	1	1	3	6	
34	40247701	Gear joint	1	1	3	6	
35	40247501	Shaft hopping	1	1	3	6	

Table 6-1 High Capacity Second/ Third Paper Feeder (2/2)

No.	Parts No.	Name	Q'ty/U	Reccomended Q'ty			Remarks
				50	100	1000	
36	4PP3522-3568P001	ADF bearing	2	2	6	12	
37	40433701	Bracket sub roller(Cauking)	1	1	3	6	
38	40317701	Gear planet(z28)	1	1	3	6	
39	40358101	Plate planet	1	0	3	6	
40	40367101	Bracket spring(sub)	1	0	3	6	
41	40928201	Spring sub roller	1	0	3	6	#
42	40317601	Gear z38	1	1	3	6	
43	40385901	Lever release assy	1	0	3	6	
44	40363301	Spring release	1	0	3	6	
45	40442501	Guide roller	2	0	6	12	
46	4PP4076-5308P001	Bearing F	1	0	3	6	
47	40363401	Spacer hopping shaft	1	0	3	6	
48	40348401	Gear hopping(2nd)	1	1	3	6	
49	40348501	Bracket planet assy	1	1	3	6	
50	40317901	Lever paper end	1	1	3	6	
51	40318001	Lever paper near end	1	1	3	6	
52	40387101	Board-BBB	1	1	3	6	
53	40375101	Connection code-wire	1	0	3	6	To 3rd Tray
54	4LP-1313-121	Mini pitch belt	1	1	3	6	
55	40371301	Roller assy hopping	1	2	6	12	
56	40313201	Roller assy feed	1	2	6	12	
57	40378401	Case assy cassette	1	1	3	6	
58	40607101	Separator frame assy	1	1	3	6	
59	40496001	PLATE-Damper	1	0	3	6	
60	NK3-16SUS	Knock Pin	1	1	3	6	
61	40387401	Plate-Earth(FR)	1	1	3	6	
62	40387601	Plate-Earth(Shaft)	1	1	3	6	
63	40387501	Plate-Earth(BR)	1	1	3	6	
64	40387301	Plate-Earth(BL)	1	1	3	6	
65	40432901	Plate-Earth(R)	1	1	3	6	
66	40583601	Core Assy-2nd Tray	1	0	3	6	To Printer or 2nd Tray
67	40912601	Plate-Earth (BL)	1	1	3	6	#
68	40912401	Plate-Earth (L)	1	1	3	6	#

Appendix E MULTI FEEDER MAINTENANCE

1. OUTLINE

1.1 Functions

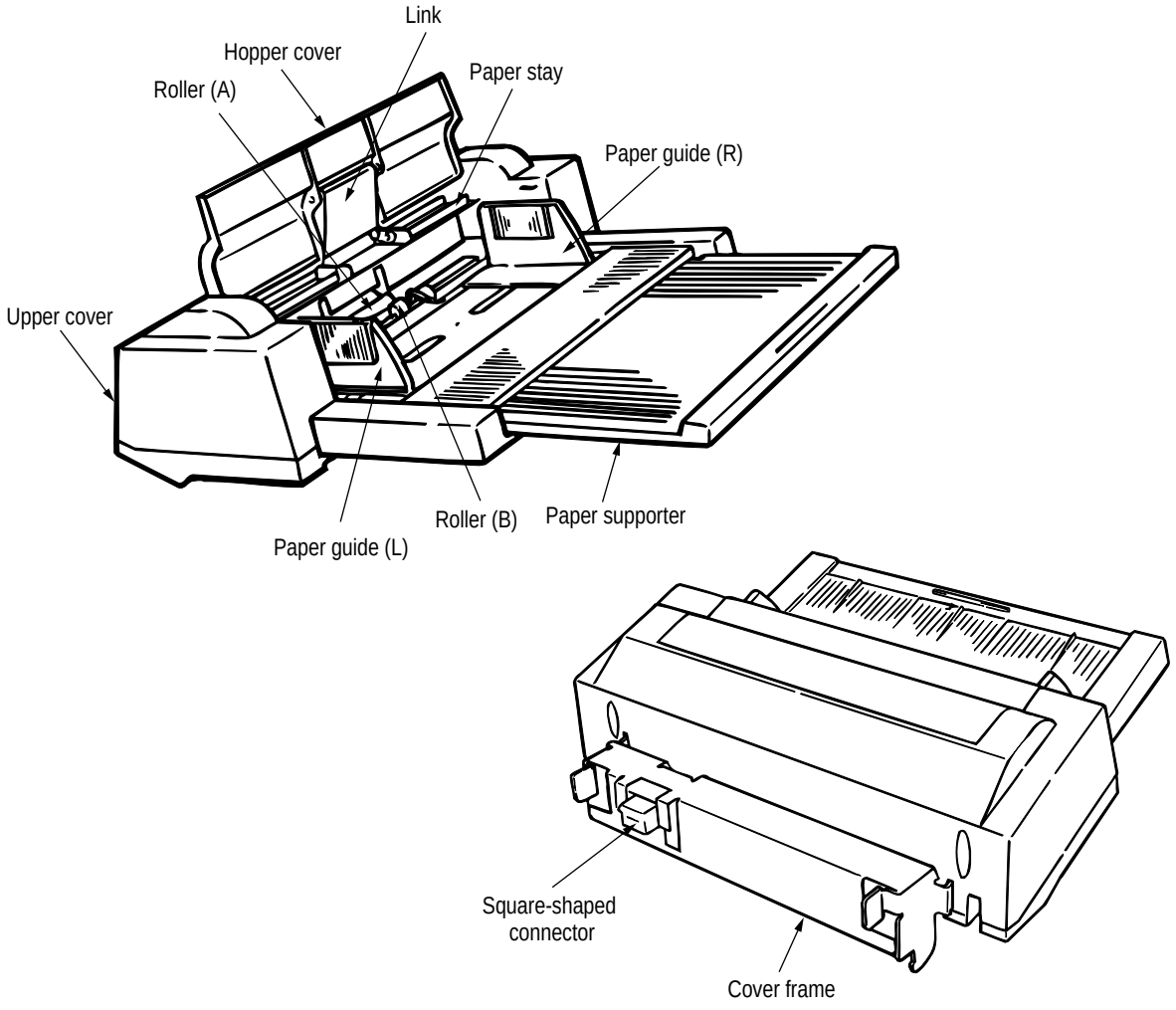
This Multi Feeder is installed on the front section of the printer, and it supplies paper automatically through the operation of hopping motor, which is driven by signals sent from the printer.
The main functions are the followings:

- Paper that can be used:

Paper type	Paper size	Quantity of paper
Plain paper	A6 (106 x 148 mm) ~ A4	64 ~ 90 g/m^2
Thick paper, OHP film		64 ~ 90 g/m^2
Post card, label sheet	Post card ~ A4-size equivalent	64 ~ 128 g/m^2
Envelope	C5, DL, COM-10, COM-9, Monarch	90 ~ 105.5 g/m^2

* approximately 50 sheets of envelopes can be set at a time.

1.2 External View and Component Names



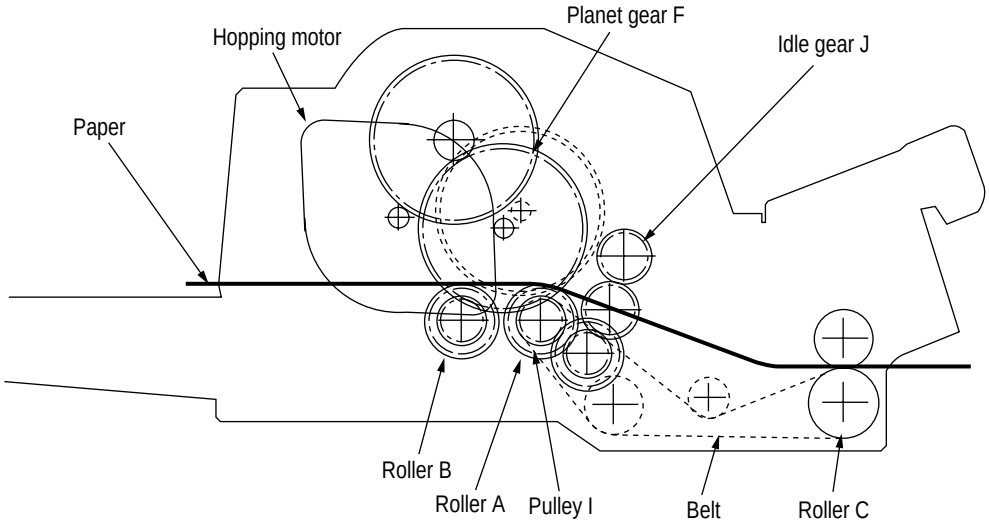
2. MECHANISM DESCRIPTION

2.1 General Mechanism

The sheet (or envelope) at the very bottom of the stack is fed into the printer, one at a time, when the Multi Feeder receives the signal from the printer.

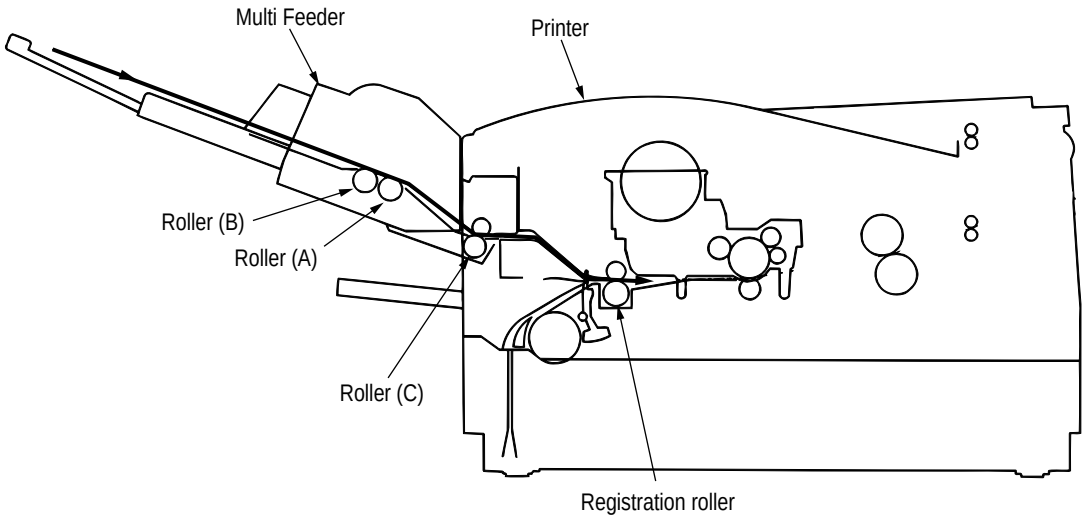
(1) First, the hopping motor rotates in the direction of arrow D. The planet gear F moves to the direction of arrow G, and drives rollers A and B. The roller C is linked to pulley I which is on the same shaft as roller A, and it also turns at the same time as roller A. The paper is fed for a predesignated distance until the leading edge reaches roller C.

(2) Next, the hopping motor rotates in the direction of arrow E. The planet gear F moves to the direction of arrow H, and drives idle gear J. The rotation of idle gear J is transmitted to the gears linked to it, and drives pulley I on the same shaft as roller A, turning roller C to feed the paper into the printer, until it reaches the registration roller of the printer. During this process, a one-way bearing is engaged at pulley I so that the rotation of pulley I is not transmitted to roller A, preventing any feeding of papers by roller A.



2.2 Hopper Mechanism

The hopper automatically feeds the printer with the paper being set, single sheet at a time.



3. PARTS REPLACEMENT

This section covers the procedures for the disassembly, reassembly and installations in the field. This section describes the disassembly procedures, and for reassembly procedures, basically proceed with the disassembly procedures in the reverse order.

3.1 Precautions Concerning Parts Replacement

(1) Parts replacements must be carried out, by first turning the printer power switch off “O” and removing the Multi Feeder from the printer.

(2) Do not disassemble the Multi Feeder if it is operating normally.

(3) Establish the extent of disassembly suitable for the purpose of the procedure, and do not disassemble any more than necessary.

(4) Only specified service tools may be used.

(5) Disassembly must be carried out according to the prescribed procedures. Parts may be damaged if such procedures are not followed.

(6) Small parts such as screws and collars can easily be lost, therefore these parts should be temporarily fixed in the original location.

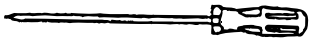
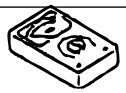
(7) When handling printed circuit boards, do not use any glove which may generate static electricity.

(8) Do not place the printed circuit boards directly on the equipment or floor.

[Service Tools]

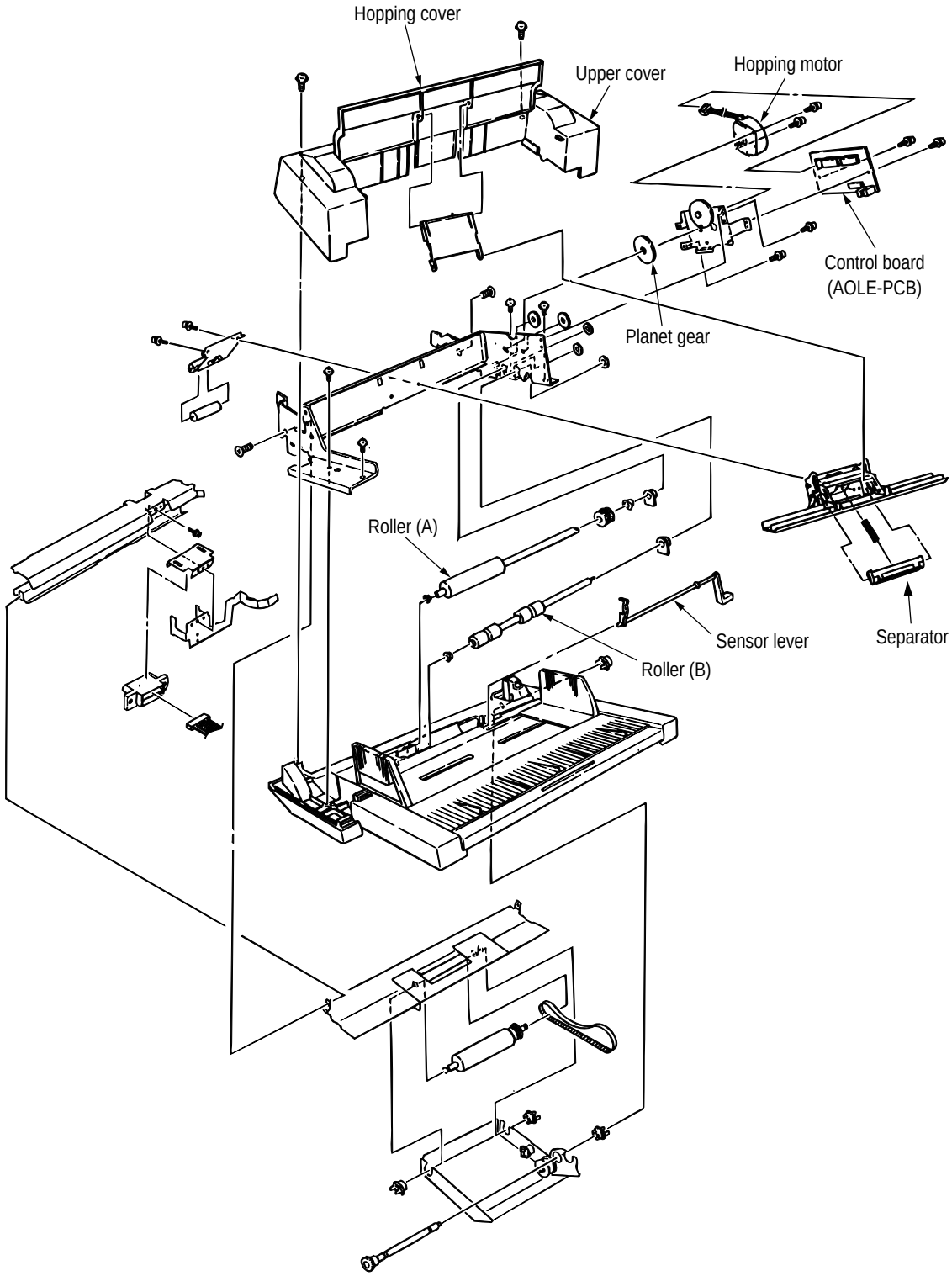
Table 3-1 shows the tools required for the replacement of printed circuit boards and units in the field.

Table 3-1 Service Tools

No.	Service Tools		Q'ty	Place of use	Remarks
1		No. 1-100 Philips screwdriver	1	2~2.5 mm screws	
2		No. 2-100 Philips screwdriver	1	3~5 mm screws	
3		No. 3-100 screwdriver	1		
4		No. 5-200 screwdriver	1		
5		Digital multimeter	1		
6		Pliers	1		
7		Handy cleaner	1		
8		Connector remover OKI P/N: 4PP4076-5395P1	1		

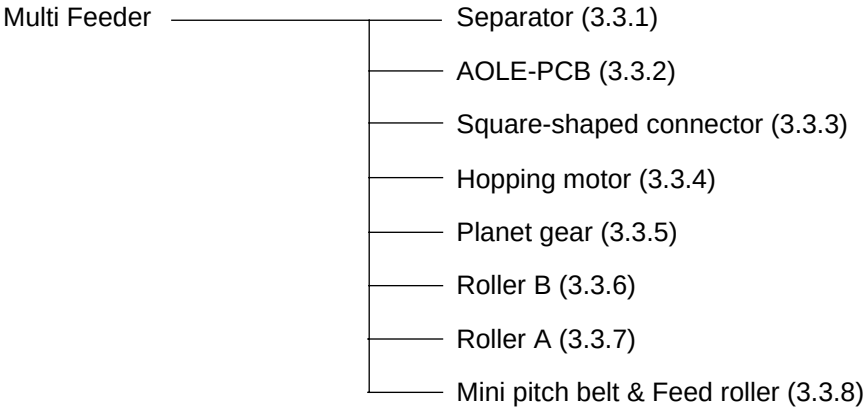
3.2 Parts Layout

This section describes the layout of the main components.



3.3 Parts Replacement Methods

This section describes the parts replacement methods for the components listed in the disassembly order diagram below.



3.3.1 Separator

(1) Turn the printer power off and remove the Multi Feeder.

(2) Disengage the link and hopper cover.

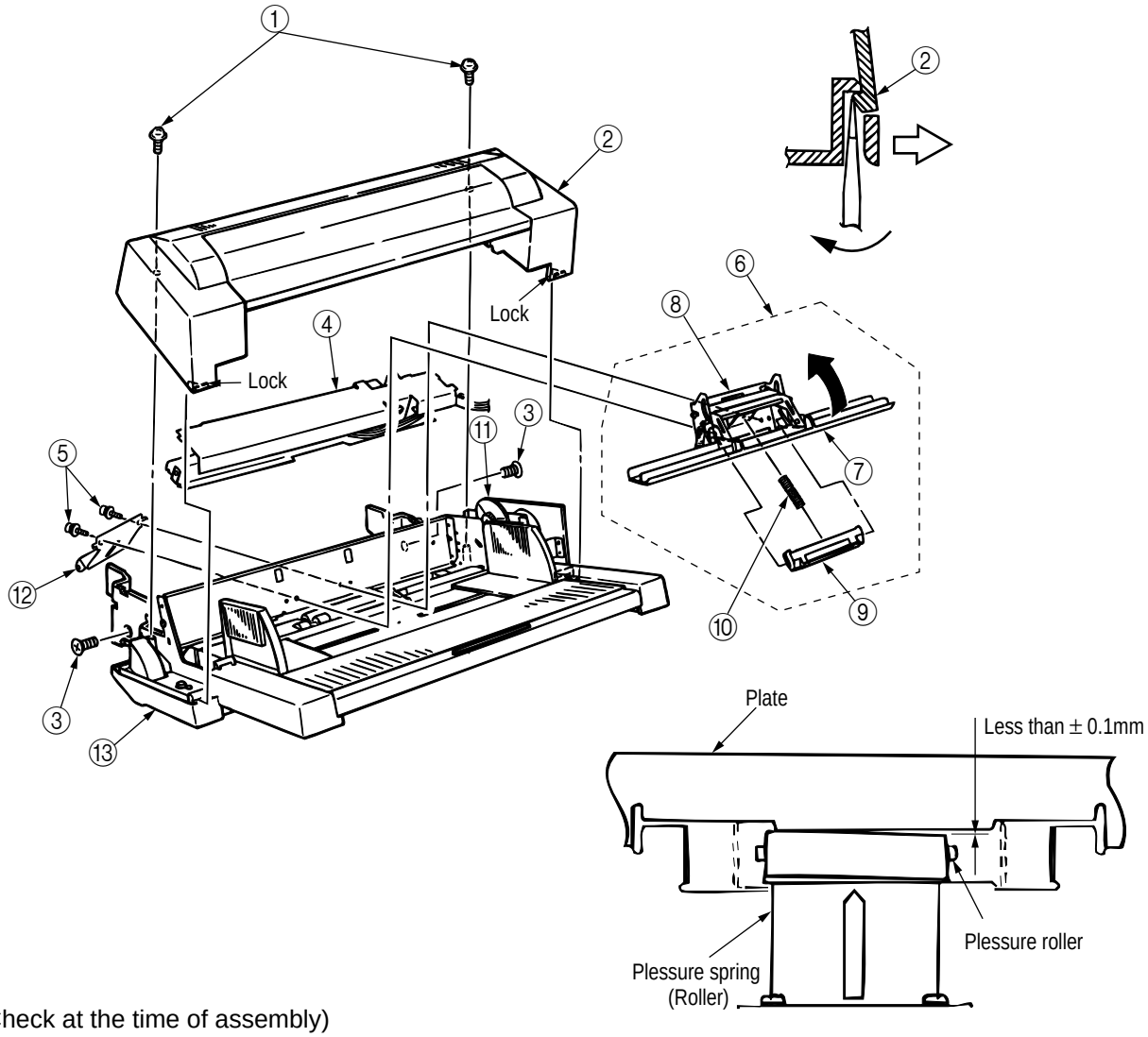
(3) Remove two screws ①, disengage two locks of the upper cover ② using a flat-head screwdriver, and remove the upper cover ②.

(4) Remove two pan-head screws ③ and remove the cover frame ④.

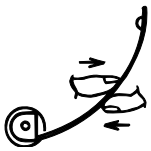
(5) Disengage the plate and the frame. (Refer to 3.3.6.)

(6) Remove two screws ⑤ and remove the separator assy ⑥.

(7) Lift the paper stay ⑦ and disengage it from the separator bracket ⑧, then remove the separator ⑨. The spring ⑩ comes off at the same time, so be careful not to lose it.



[Check at the time of assembly)



When the secondary stage of idle gear ⑪ is turned in the A direction after engaging the plate and the frame, the inclination of the pressure roller ⑫ is less than ±0.1 mm against the plate ⑬, as shown in the right figure. When the inclination of the pressure roller exceeds ±0.1 mm, fine-adjust it by pressing with fingers, as shown in the left figure, with the pressure spring (roller) installed.

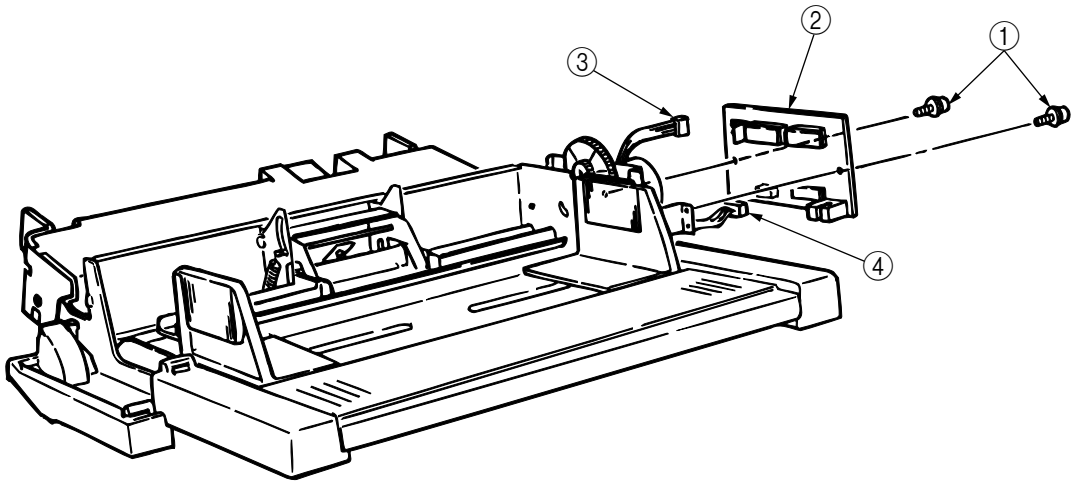
3.3.2 AOLE-PCB

(1) Remove the upper cover (see 3.1.1 (1) to (3)).

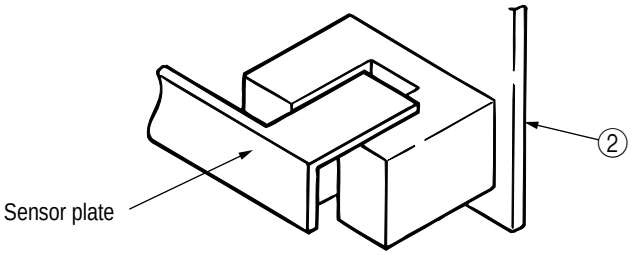
(2) Remove two screws ① and remove the AOLE-PCB ②.

(3) Remove the connector ③.

(4) Remove the connector ④.



Caution: Be careful to set the sensor plate properly when mounting AOLE-PCB.



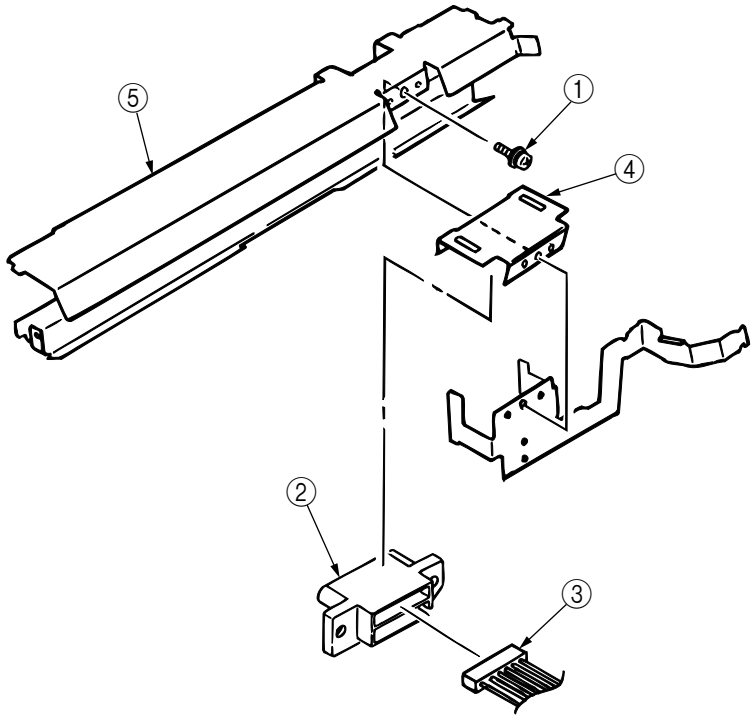
3.3.3 Square-shaped connector

(1) Remove the upper cover and remove the cover frame ⑤ (see 3.3.1 (1) to (4)).

(2) Remove the AOLE-PCB (see 3.3.2).

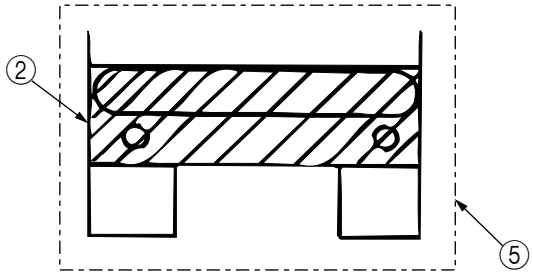
(3) Remove the screw ① and remove the square-shaped connector ②.

(4) Using the connector remover, remove the nylon cord ③ from the square-shaped connector ②.

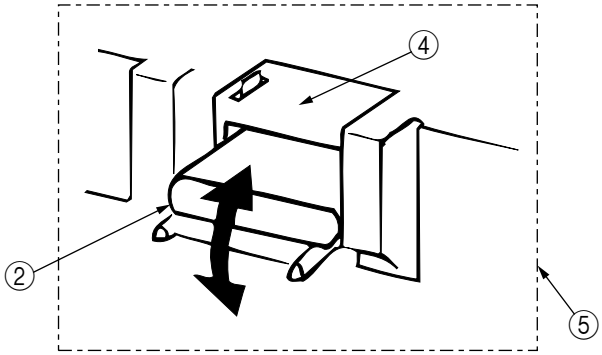


[Confirmation after assembly]

1. The square connector ② should be horizontal to the cover frame ⑤.



2. The square connector ② should be hooked on the connector spring ④ and move smoothly.

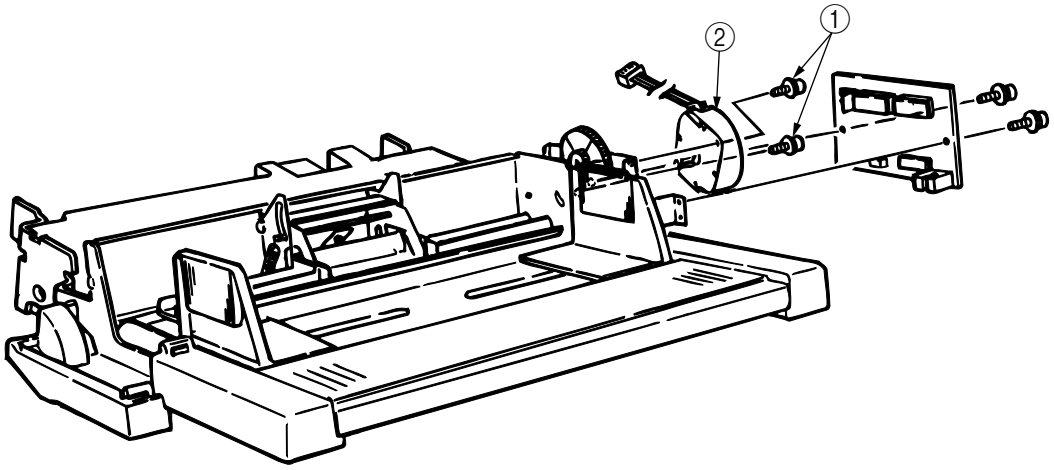


3.3.4 Hopping Motor

(1) Remove the upper cover (see 3.3.1 (1) to (3)).

(2) Remove the AOLE-PCB. (see 3.3.2)

(3) Remove two screws ①, then remove the hopping motor ②.

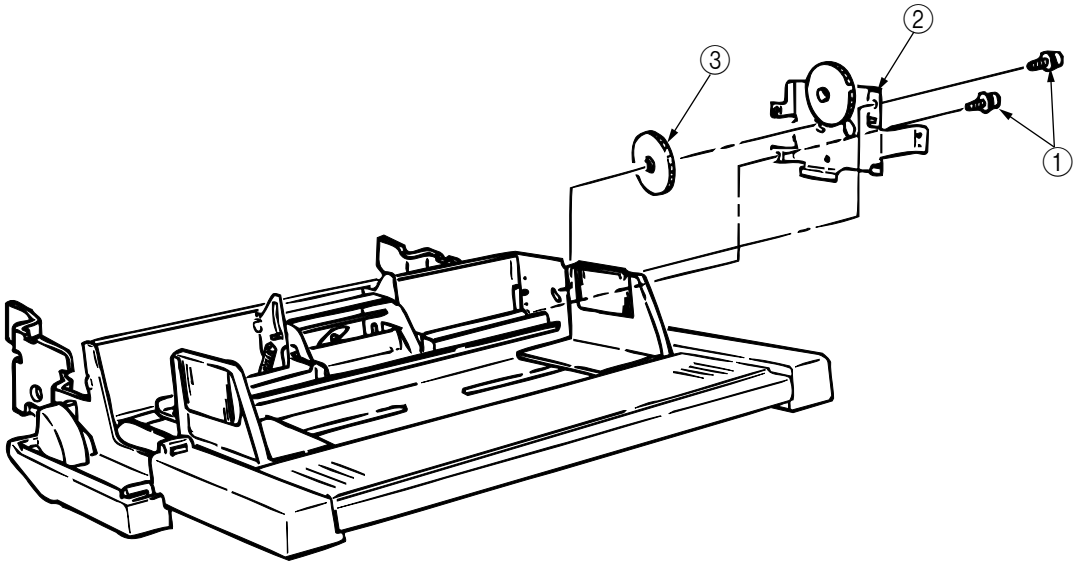


3.3.5 Planet gear

(1) Remove the upper cover (see 3.3.1 (1) to (3)).

(2) Remove the AOLE-PCB (see 3.3.2).

(3) Remove two screws ①, then remove the motor bracket assy ② and the planet gear ③.



3.3.6 Roller B

(1) Remove the upper cover (see 3.3.1 (1) to (3)).

(2) Disengage the plate and frame (on both sides).

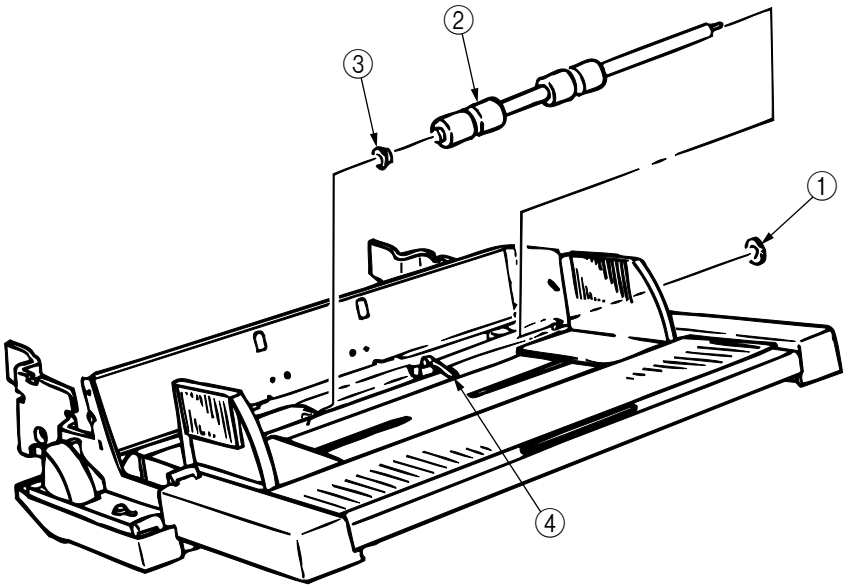
(3) Remove the separator assy (see 3.3.1 (4) to (5)).

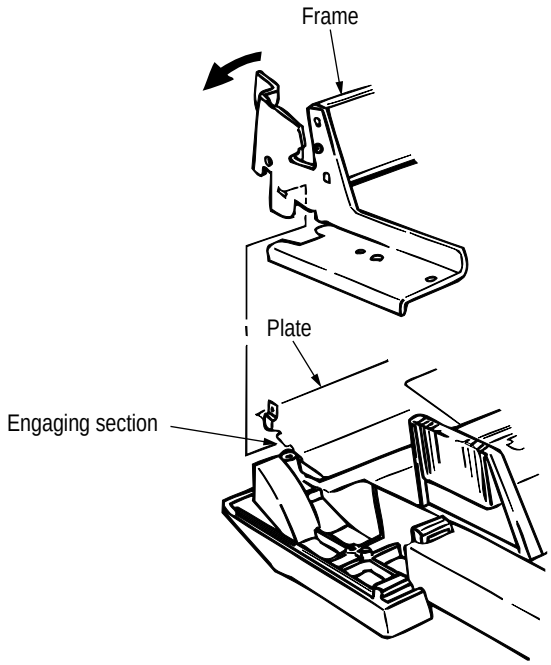
(4) Remove the AOLE-PCB (see 3.3.2).

(5) Remove the motor bracket assy (see 3.3.5).

(6) Remove the gear ①.

(7) Shift the roller B ② to the right, lift it by holding on its left side, and pull it out to the left side. The bearing ③ also comes off at the same time, so be careful not to lose it. Further, pay special attention to make sure that you do not damage the sensor lever ④ while going through this procedure.





3.3.7 Roller A

(1) Remove the motor bracket assy (see 3.3.5).

(2) Remove two gears ① and then another gear ②.

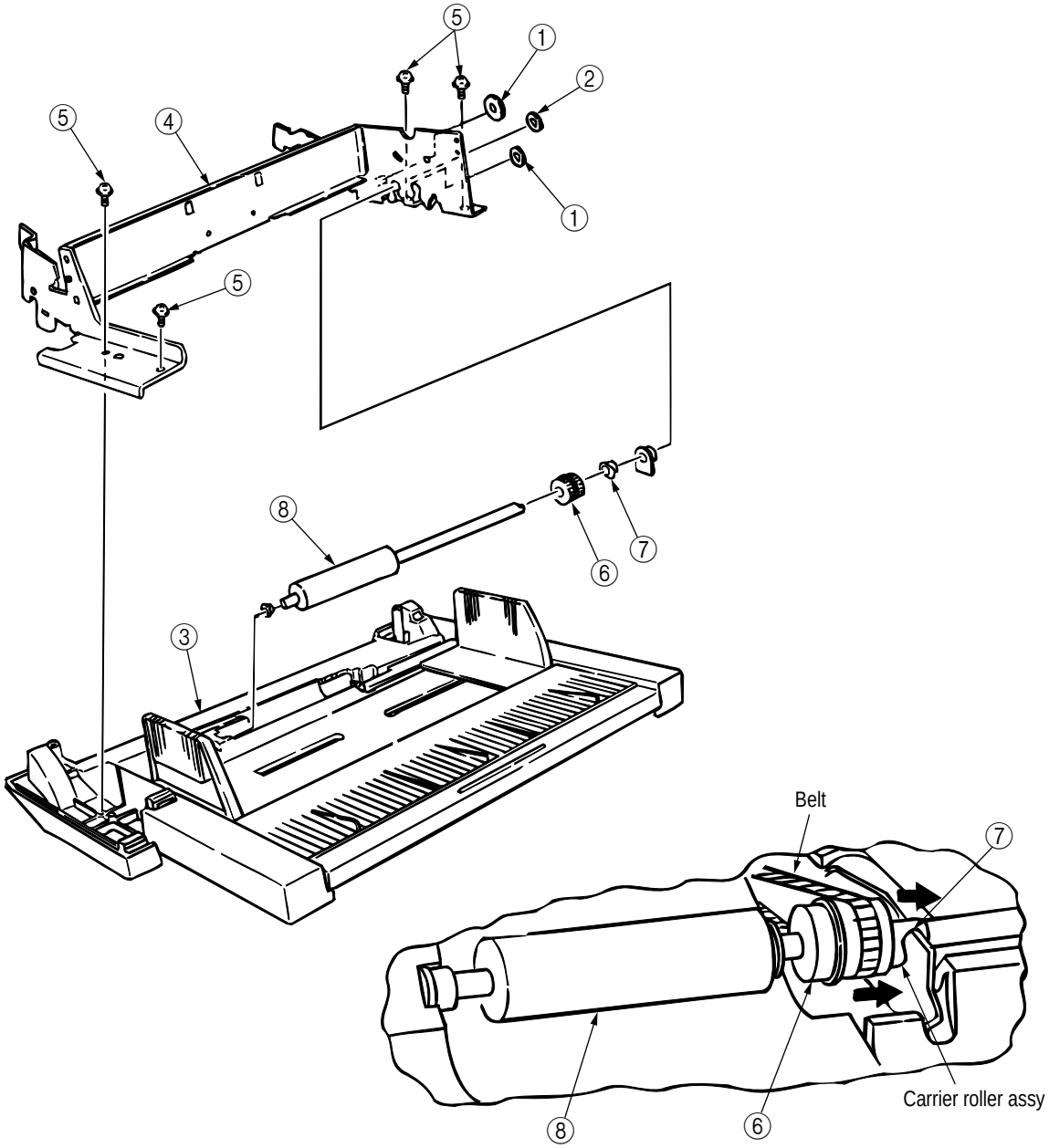
(3) Disengage the plate ③ and the frame ④.

(4) Remove four screws ⑤ and remove the frame ④ (see 3.3.6).

(5) Move the belt to the right and remove it from the one-way pulley ⑥.

(6) Move the carrier roller assembly to the right, and remove it from the shaft ⑦.

(7) Move the roller A ⑧ to the right, lift its left side, and then pull it off to the left. (Be careful not to lose the shaft ⑦ being removed together.)



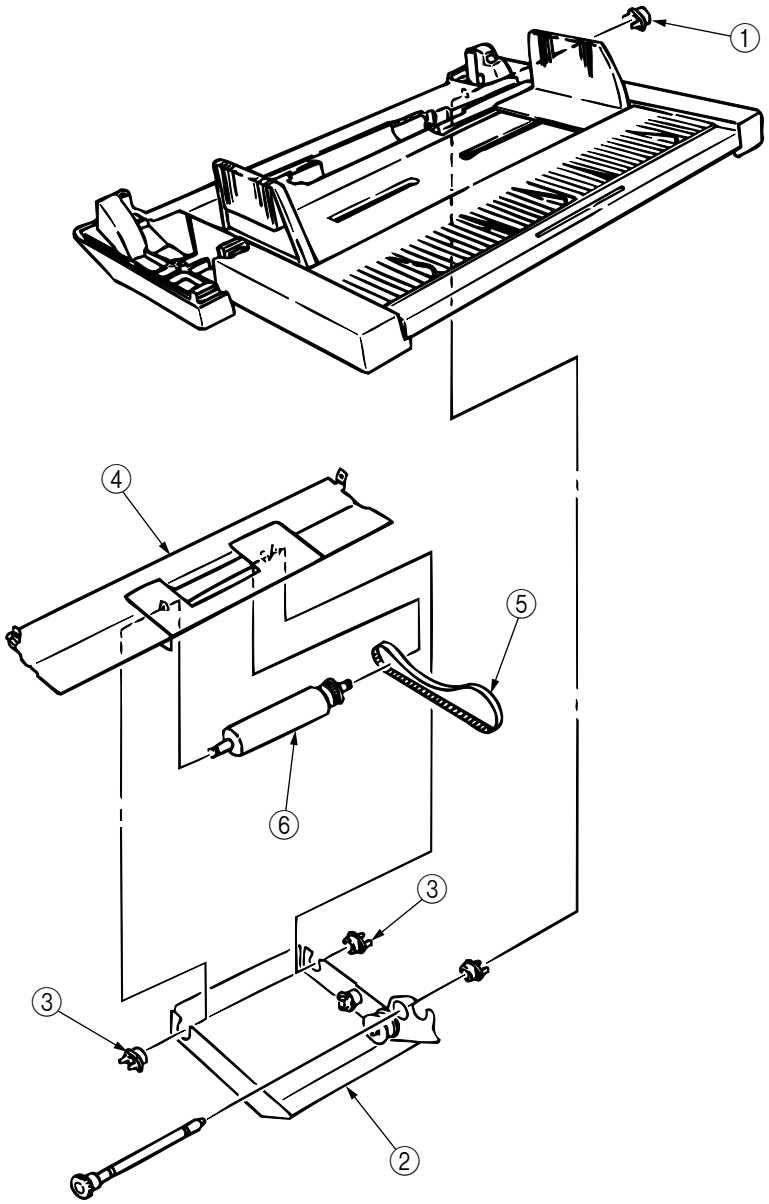
3.3.8 Mini pitch belt & Feed roller

(1) Remove the roller A (see 3.3.7).

(2) Remove the bearing ① and remove the feed roller assy ②.

(3) Remove two bearings ③ and remove the plate ④.

(4) Remove the mini pitch belt ⑤ and the feed roller ⑥.



4. TROUBLESHOOTING

4.1 Precautions Prior to the Troubleshooting

(1) Go through the basic checking items provided in the Operator Guide.

(2) Obtain detailed information concerning the problem from the user.

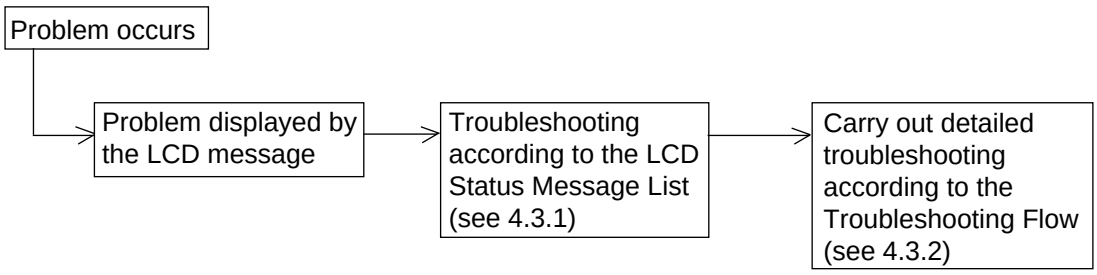
(3) Go through the checking in the conditions similar to that in which the problem occurred.

4.2 Preparations for the Troubleshooting

(1) Display on the operator panel
The status of the problem is displayed on the LCD (Liquid Crystal Display) on the operator panel. Go through the appropriate troubleshooting procedures according to the messages displayed on the LCD.

4.3 Troubleshooting Method

When a problem occurs, go through the troubleshooting according to the following procedure.


Problem occurs
Problem displayed by the LCD message
Troubleshooting according to the LCD Status Message List (see 4.3.1)
Carry out detailed troubleshooting according to the Troubleshooting Flow (see 4.3.2)

4.3.1 LCD Status Message List

The listing of the statuses and problems displayed in the form of messages on the LCD is provided in Table 4-1.

Table 4-1

Classification	LCD Status Message	Description	Recovery method
Jam error	PAPER INPUT JAM CHECK FEEDER PAPER FEED JAM CHECK FEEDER	Notifies of occurrence of jam while the paper is being fed from the Multi Feeder.	• Check the paper in the Multi Feeder. Carry out the recovery printing by opening the cover, removing jammed paper and closing the cover, and then turning the error display off. • When the problem occurs frequently, to through the Troubleshooting.
Paper size error	ERROR PAPER SIZE CHECK FEEDER	Notifies of incorrect size paper feeding from the Multi Feeder.	• Check the paper in the Multi Feeder. Also check to see if there was a feeding of multiple sheets. Carry out the recovery printing by opening the cover, removing paper and closing the cover, and then turning the error display off.
Tray paper out	PAPER OUT mmmmmmmm FEEDER mmmmmmmm: Paper size in the tray being selected	Notifies of no paper state of the Multi Feeder.	• Load the paper in the Multi Feeder.
Interface Timeout	ERROR 81	Notifies of occurrence of interface timeout between the printer and the Multi Feeder.	• Verify connection of AOLE-PCB and square-shaped connector. Replace the square-shaped connector if necessary. • Replace AOLE-PCB.

4.3.2 Troubleshooting Flow

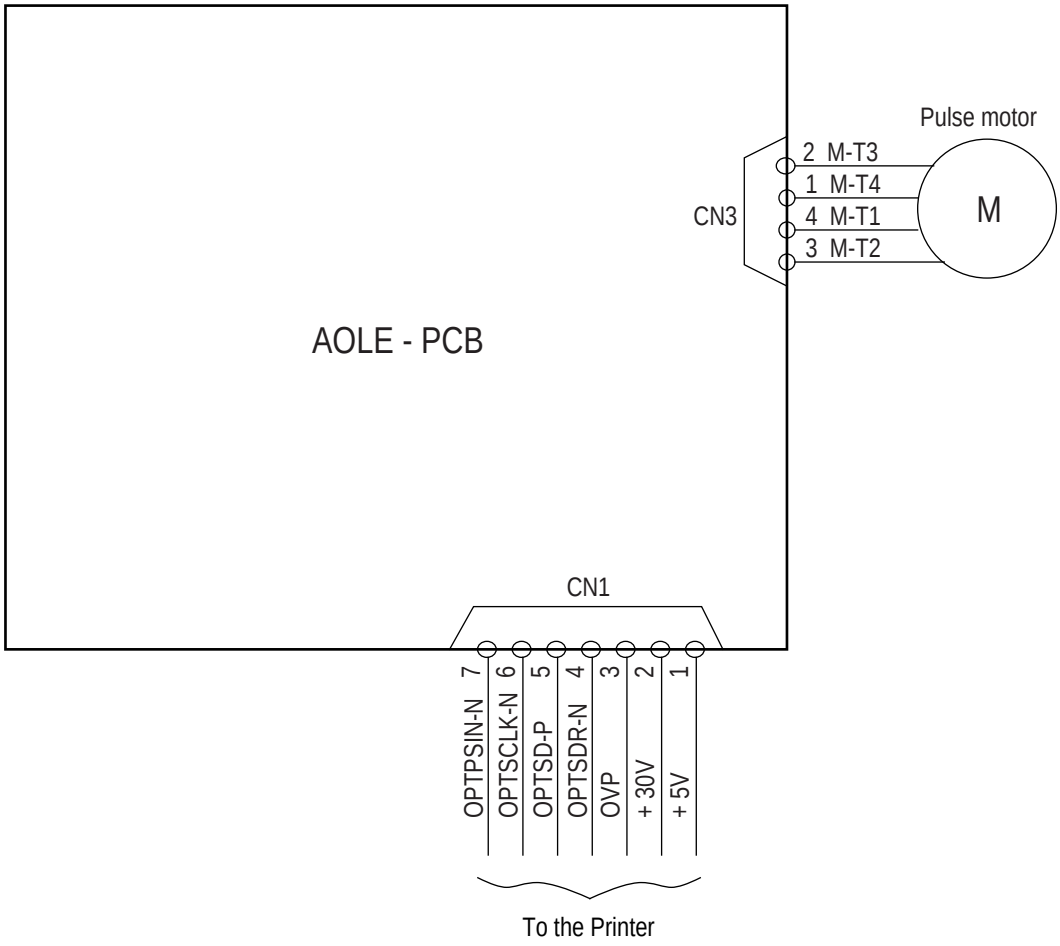
• (JAM error)

Paper Input Jam

- Does paper jam at the inlet when the power is turned on?
  - YES — Is the paper located above the inlet sensor lever?
    - YES — Remove the paper.
  - NO — Is the inlet sensor lever operating normally?
    - NO — Replace the inlet sensor lever.
  - YES — Clean the inlet sensor 1 on the power supply unit (High Voltage) or replace the power supply unit (High Voltage). (See Fig.2.3 Sensor Layout Diagram)
- NO — When the paper is fed in, does the paper input jam occur?
  - YES — Is the paper being fed to above the inlet sensor lever?
    - YES — Is the inlet sensor lever operating normally?
      - NO — Replace the inlet sensor lever.
    - YES — Clean the inlet sensor 1 on the power supply unit (High Voltage) or replace the power supply unit (High Voltage). (See Fig.2.3 Sensor Layout Diagram)
  - NO — Replace the feed roller, roller-A or roller-B.
- NO — Are the feed roller, roller-A and roller-B rotating?
  - YES — Set the paper properly.
- NO — Is the belt torn?
  - YES — Replace belt.
- NO — Is the pulse motor turning?
  - YES — Replace planet gear.
- NO — Is the connector cable being connected properly?
  - NO — Connect the connector cable properly.
- YES — Check the coil resistance (approx. 32Ω) of the stepping motor. Is it normal?
  - NO — Replace the stepping motor.
- YES — Replace the AOLE-PCB.

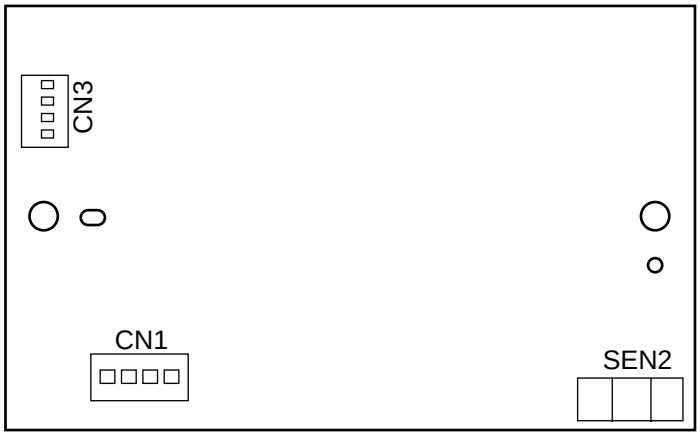
5. CONNECTION DIAGRAM

5.1 Interconnection Diagram



5.2 PCB Layout

AOLE-PCB



6. PARTS LIST

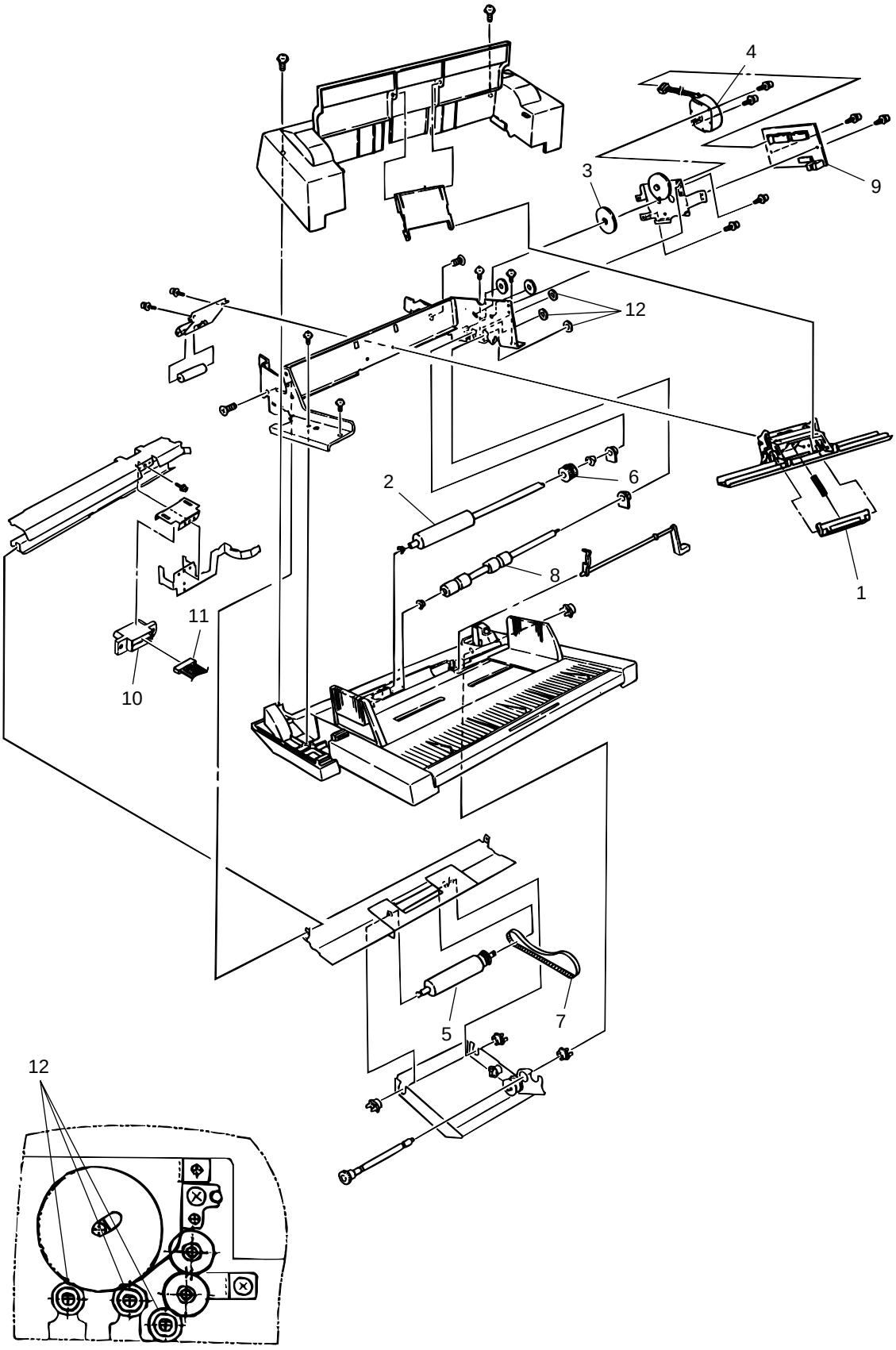


Table 6-1 Multi Feeder

No.	Parts No.	Name	Q'ty/U	Reccomended Q'ty			Remarks
				50	100	1000	
1	4PP4083-5544G001	Separator	1	1	3	6	
2	3PB4083-5514P001	Roller-A	1	1	3	6	
3	4PP4083-5520P001	Planet gear	1	1	3	6	
4	4PB4083-6075P001	Hopping motor	1	1	3	6	
5	3PB4083-5524P001	Roller-C	1	1	3	6	
6	4PB4043-4614P001	One-way pulley	1	1	3	6	
7	4LP-1313-338	Mini pitch belt	1	1	3	6	
8	4PB4043-4743P001	Roller-B	1	1	3	6	
9	4YA4046-1647G011	AOLE-PCB	1	1	3	6	
10	2201000P0141	Connector(IMSA-9714N-14B)	1	0	3	6	
11	4YS4011-4448P004	Nylon connector cord	1	0	3	6	
12	4PP4083-2394P001	Stirrer roller gear	3	3	9	18	